THE MEANING OF THE ARCHITECTURAL FORM OF THE TOWER
THE ANCIENT TOWERS OF SIPHNOS

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phenomenon of building numerous towers in Siphnos and also in other Hellenic regions in antiquity (sixth ourth century BC) has been studied only relatively recently by scholars. Their number, the quality of the cture, and the constant typology of these towers, contest the suggested theories about their original purpose.

In this study, the analysis of the towers addresses not just the structure of the building but also the ning that has been attributed to the space and the form. This research is an attempt to detect the architectural lities that render the tower capable of corresponding to specific requirements and to fulfilling the intentions heir creators.

The analysis of the meaning and the intentions which prompted the selection of the particular itectural *eidos,* is derived from the perceptions and beliefs of that era in terms of its social, religious, osophical and technological contexts. The results of the phenomenological analysis have been confirmed further supported from by historical, religious and anthropological research.

The research proposes that the towers of Siphnos have had a multivalent connection with the mines ch can be interpreted as sacred and functional. The vegetation and generation of metals, ores and minerals considered as a certain fact in antiquity. The regeneration of all creatures presupposed the ceremonial tition of the sacred coitus of the primordial couple in the ritual known as "hieros gamos". The tower is the ptor, the intermediary vehicle in the performance of this holy marriage, attracting thunderbolts that stitute the sign of this union. Also, the towers define and demarkate the metallurgical region and shape the graphical networks in accordance with the entries of the galleries, in order to construct their specific ntated directions. The capability of the towers in attracting lightning, has served positively the safety of the e workers and mines. The fact that all the towers stand on surface metalliferous veins, as was expected, rding to renaissance texts, answers the unsolved problem of the placing of the towers around the island and firms the verification of the proposed theory.

To the Olympian
bearing the name of Earth

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INTRODUCTION

The research for this thesis began with a question about the intangible values of architecture and more specifically, about the cultural meaning of the built heritage. Having been working as an architect at the Greek Ministry of Culture for the last twenty years, the author has been required involved in various restoration projects - ancient monuments, Byzantine cloisters, archaeological sites, historical city centres - that have been undertaken and accomplished by the Ephorate of Antiquities responsible for the largest part of Peloponnesus, Arcadia, Laconia, Messenia and Argolid. The question of whether the documentation, conservation and preservation of the physical existence of a building and its material evidence is sufficient to contribute an understanding of the meaning and purpose that its architectural heritage implies it would have had at the time it was created, and which one might or should ascribe to it now and in the future, has become very important in the process of selecting and applying conservation methods, rules and practices.

Restoration and preservation of the city-centre of Nauplion, the first capital of Greece in the modern era and a city designed and built during the nineteenth century, resulted in the creation of a backdrop for very contemporary activities addressed to tourism that excluded the inhabitants from their own city. But the most striking experience was the restoration project of two churches in Argolid. The first is the Byzantine church of Merbakas dedicated to Panagia (Mary), one of the best preserved and best known in Greece, built at the end of the thirteenth century, and the second a small double post-byzantine church in Adami, a small village up on the hills of Argolid. The Byzantine monument was the object of research by many scholars and the conservation project required the removal of the cemetery that was covering the east and south sides of the famous church and the exception of the monument from liturgy for the purpose of the protection of the church from possible damage deriving from these activities. The second church was to be restored as it was, since it was not considered to be a valuable monument, carrying popular-art frescoes from the nineteenth century that had been extensively plastered while the original humble church

of the eighteenth century had been altered by the addition of another parallel placed church during the nineteenth century.

The outcome of the restoration project was quite unexpected. In spite of the fact that the villagers of Merbakas had initially accepted removal of the tombs and use of another church for their religious rituals, when the removal of the tombs and the striping of the interior of the church began, they strongly opposed the whole procedure and the whole matter attracted very bad publicity in the media all over the country. Nevertheless it was too late to change any of the decisions that had been made, and the project proceeded as originally planned. The empty interior was organised for the viewing of the Byzantine frescoes, which were restored (allbeit badly damaged), by the visitors and a number of movable lights decorated and illuminated the space; the "purified" exterior space, after the removal of the tombs served as the parking place for the tourist buses. The community of Merbakas can only use the church once a year to perform a service while the visitors can enjoy the art of the monument every day by paying a small fee.

The second one, a double church dedicated to St Nikolaos and St Demetrios, rests at the centre of a remote village up on the hills of northern Argolid, Adami. The church was covered with plaster, it was dated to the eighteenth century (quite recent for Greece) and it was not considered to be of a high historical, artistic and architectural value, and it would have never been chosen as a project unless a high-ranked politician who was born there had not demanded and financed its restoration. When the workings began, the restorers were surprised by the constant interest of the villagers on the progress of the work and their every-day visits in order to look at the revealed frescoes, "their saints" as they were saying. Very soon it became clear that the architectural features of the churches and the frescoes that were constantly revealed had a profound meaning for the small community that was beyond any estimated historical or architectural value. When the restoration was finished, the people organised a festival to announce the significance their new-old church had for their identity and sense of continuity.

It was evident to the author that the intangible values were at least as equally important for the existence and prospective of a monument as its physical substance. Architectural conservation projects cannot simply

conserve the original state of a building, since even buildings that have not been structurally changed acquire all sorts of "intangible values" through their use. Architectural conservation ought to respect these intangible values, but in the case of buildings which have little or no active modern use[1], the question of how these intangible values can be recovered remains essential and also problematic. The questions had been formed: what are these intangible values of built heritage? How do they develop throughout the life of a building? How is the form of a building connected with its meaning as perceived each time by the observer or the user? Are there any invariants in a particular architectural form that are connected with its essence? And finally, could a methodology be applied in order to identify the essence of architecture, the invariants of a form and how these have been perceived in diverse cultural contexts? These are the questions that this research will attempt to answer.

This thesis takes the ancient towers of the Greek island of Siphnos as one such class of buildings, that is that they have little or no active modern use, and reviews the ways in which those towers have been studied up to date and offers a number of ways of approaching the recreation of intangible values.

Chapter 1 presents an analysis of the philosophical and theoretical background to the approach to conservation of historic monuments and buildings and their meaning.

The meaning attributed to any architectural form is determined by its synchronic context and is expected to be variant; nevertheless, the architectural qualities inherent in the *eidos* of a structure are invariant and diachronic. The initial aim, to identify the meaning of a prominent and simple architectural form, the tower, led to the investigation of the main subject of the thesis, which is, the identification of the original purpose of the numerous ancient towers built on the Cycladic island of Siphnos from the sixth century to the fourth century BC.

Chapter 2 is dedicated to a presentation of the phenomenon of the ancient Greek towers and more particularly to the Siphnian towers. The literature review on the subject reveals a number of various interpretations

[1] For a comprehensive and interesting approach to the intangible values that the Parthenon has acquired since (and even before) it was built, see in Mary Beard, *The Parthenon, Wonders of the World* (London: Profile Books, 2004).

that have been proposed occasionally and the problem of their insufficiency in addressing the phenomenon is described. The towers, until now, have been examined as isolated structures because this was more contingent on their interpretation. The fact is that they form groups and they are located in certain areas of Greece; if the purposes that have been suggested for them previously had been valid then the question why they are not found also in other areas of the Hellenic region has not been addressed in a satisfactory or convincing way.

Chapter 3 is concerned with the cultural study of Siphnos and consists of a geographical description, an historical analysis, along with economic and social aspects. It is suggested that the architectural qualities of the tower were used to declare the power of knowledge and wealth that the Siphnians possessed and also to serve functional or practical purposes in connection with the most profitable activity on the island at that period, which was the mining of mineral ores.

In Chapter 4 the ancient beliefs and concepts about, and philosophical approaches to mining, metals and metallurgy are examined from the prehistoric to the classical periods in the extended area of Greece. The belief that the metals were generated from the earth is presented and analysed.

In Chapter 5 diverse cases of towers are analysed and the various meanings are exemplified, focusing on the historical period before and during the construction of the Greek towers. Phenomenological principles are applied to the analysis of the spatial experience of the tower in order to identify their essential architectural qualities. The essences of the tower combined with the meaning the tower had as these are construed from the above analysis, were applied to the phenomenon of the Greek towers and more specifically, to the towers of Siphnos and from that the author's hypothesis was formed. The methodology proposed in order to understand the meaning of and moreover the purpose the towers had at the time they were built, included analysis of their cultural, historical and economic contexts.

The results from the phenomenological and comparative historical research of the towers, were applied to the towers of Siphnos, and the hypothesis was formed that the towers had a multivalent purpose, which was connected to the silver and gold mines for which the island was famous in

antiquity. It is suggested by the author that their original purpose was also connected to the sacred aspect of mining and at the same time there were functional purposes that can be identified.

An extended analysis of the Siphnean pantheon and the religious rituals and practices of the archaic and classical period, in an attempt to identify the ones that could have been expected to have been associated with mining, is presented in Chapter 6. The sacred aspect of mining and the belief about the generation of metals is connected with the towers and the rituals performed by the Siphnians. The research on the metallurgical concepts and practices reveals that there could also have been intensions other than strictly functional in the construction of such expensive buildings.

In Chapter 7 the assumptions that derive from the hypothesis are tested against the possible functional purposes of the towers in connection with the mines and the mine workings. The functions identified as probable are presented and the original hypothesis would seem to have been verified from the location of the towers and their inter-visibility connections, which were worked out and identified using a GIS software program. These interconnections form triangular topographical networks that would have been ideal as surveying tools of the methods used by miners in antiquity to direct the galleries and open shafts, exactly as these networks were anticipated and described by the historian of metallurgy, Robert Forbes[2].

The hypothesis was finally supported by the discovery that the towers are located, are standing, on thin surface metalliferous non-extractable veins, as had been assumed. This had been expected if they were to have functioned as passages for the "fire" from the stars that generate and enhance the growth of the metals, according to ancient beliefs, as was described in Aristotle[3], and in renaissance texts on mining as by Agricola[4] and Biringuccio[5].

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[2] Robert James Forbes, *Studies in Ancient Technology*, 10 vols., vol. VII (Geology, Mining) (Leiden: E. J. Brill, 1963), p. 141.
[3] Aristotle, *Meteorologica*, trans. E. W. Webster (Oxford: Clarendon Press, 1968).
[4] Georgius Agricola, *De Re Metallica. Translated from the first Latin edition of 1556, with biographical introduction, annotations and appendices upon the development of mining methods... from the earliest times to the 16th century*, trans. Herbert C. Hoover and Lou H. Hoover (London: 1912).
[5] Vannocio Biringuccio, *Pirotechnia*, trans. Cyril Stanley Smith and Martha Teach Gnudi, 1990 ed. (New York: Dover Puplications, 1540).

CHAPTER 1

Philosophical approach to architectural conservation and methodology

Architectural conservation is considered to be the act of identifying, restoring and preserving the cultural heritage that has survived in the form of buildings or man-made structures and sites. It has become the field of practice for a growing number of architects and archaeologists as well as other experts in almost every country throughout the world. This international practice has been generated and supported by the International Council of Monuments and Sites (ICOMOS), a non-governmental organization which is part of UNESCO[6]. ICOMOS was formed in 1965 and during the past 40 years has organised numerous international conferences and meetings to address the complicated technical and ethical issues of conservation. These have provided conservators with guidelines and research tools in the form of conventions, charters, etc. which in many cases (but not always) have been incorporated in the state or national legislation of each country[7].

The practice of architectural conservation is a difficult and demanding task especially in Greece. Different approaches are required to protect ruins as opposed to "living" monuments, as are called the buildings that are still in use. Most of the ICOMOS charters have become part of Greek legislation, unlike in many other countries. This is mainly due to the high responsibility that modern Greeks feel they have in undertaking to save and secure their architecture and generally speaking, the "cultural heritage" of their ancestors for the next generations but at the same time, they want to claim recognition for the continuity of this "glorious" past, through the appraisal and promotion of the physical remains of previous civilisations. The preservation of cultural heritage has been considered to have been of primary importance ever since the modern Greek state was formed, hence the so-called Archaeological

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[6] For information on the history and activities of ICOMOS in Jukka Jokilehto, *A History of Architectural Conservation*, ed. ICCROM (Oxford: Butterworth - Heinemann, 2002), pp. 245 ff.

[7] There is great variety and inconsistency in the legislations among countries all over the world, even within European Community. For detailed information on the subject in Robert Pickard, ed., *Policy and Law in Heritage Conservation, Conservation of the European Built Heritage* (London: Spon Press, 2001).

Law[8] was one of the first laws issued and it still is one of the most powerful. The overwhelming task of preserving, restoring and making accessible to all, has determined the work of the staff of the Archaeological Department of the Ministry of Culture. According to the Greek State Constitution[9], it is the duty of the state "to protect the natural and cultural environment" and the obligation of its citizens to accept and comply with any restrictions that the authorised officers consider necessary.

All works and actions of preservation and mainly of restoration have to follow the Venice Charter (ICOMOS 1964), the Declaration of Amsterdam(European Council 1975) the Granada Convention (European Council 1985) and all the other Charters and Acts of ICOMOS (Washington, Bura, Nara, etc) plus Greek legislation[10].

These international principles were addressed over 150 years ago in Britain[11] and were reiterated and encapsulated in the following words:

> "...it is better to consolidate than to repair, better to repair than to restore, better to restore than to rebuild, better to rebuild than to embellish" [12].

Given all the above principles and in particular the one regarded as the most important, the Venice Charter, Greek architects and archaeologists are struggling to deal with the complicated issue of the conservation of the country's cultural, and more specifically, architectural heritage. These principles have led to rigid and comprehensive methods and solutions which have dictated the appropriate level of intervention that a conservator is allowed to take.

During the last 50 years, techniques have been developed so that the authenticity of the structure as well as its form can be preserved. Much effort is expended in sustaining the original material and texture, along with the surrounding urban or natural environment. Thus the "value" of the building as

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[8] First issued in 1833

[9] Greek Constitution Art.24, pr.1

[10] The legislation has been recently (2002) updated (since 1932) with a new law "for the protection of Antiquities and all Cultural Heritage" N. 3028/2002.

[11] "Modern" approaches to conservation in the United Kingdom developed from the nineteenth-century writings of John Ruskin (Lamp of Memory, 1855) and William Morris.For more information see in Pickard, ed., *Policy and Law in Heritage Conservation.*

[12] Derek Linstrum, "The principles of conservation - the York gospel," (York: York University). (Notes given to the students of the architectural conservation course at York University)

an object (or property) of Greece's cultural or architectural heritage is preserved.

Over the past 30 years, the concept of cultural heritage has been continually broadened. The Venice Charter (1964) made reference to monuments and sites and dealt with architectural heritage. Subsequent charters and recommendations have covered groups of buildings, vernacular architecture, industrial and 20th century built heritage and the concept of "cultural landscape" highlighted the interpretation of culture and nature. UNESCO has established a list of "World Heritage" sites which includes monuments of human civilization and natural sites. The criteria given in the 1972 Convention concerning the Protection of the World Cultural and Natural Heritage that determines a building or a site as inclusion in this catalogue, all refer to the 'outstanding universal value' that such a monument or site should have.

A definition of 'universal' in the concept of 'outstanding universal value' was attempted in 1974 and was suggested that the word should mean that a property[13] should "represent or symbolise a set of ideas or values which are universally recognized as important, or as having influenced the evolution of mankind as a whole at one time or another"[14].

It is apparent that the criteria and the given definitions mainly refer to intangible values, while in contrast, all efforts after they have been listed as a World Heritage site, address the physical existence and appearance of the building or the site.

The material substance of a monument is the basic object of the work of conservators. The authenticity of historical monuments and the material values that are encoded in them have formed an idea of cultural "property" which has become the "cult of an object"[15]. It is worth noting that Alois Riegl, the Austrian art historian who published one of the very first texts on the

[13] It is interesting to notice that the word "monument" has gradually been replaced by the word "property" in UNESCO terminology.
[14] The World Heritage List: Filling the Gaps - an Action Plan for the Future. An Analysis by ICOMOS February 2004 in www.international.icomos.org/ world_heritage/whlgaps-eng.pdf
[15] Mounir Bouchenaki and Andrzej Tomaszewski, "Tangible and Intangible Values of Cultural Property in Western Tradition and Science" (paper presented at the ICOMOS 14th General Assemply and Scientific Symposium - Place - Memory - Meaning: preserving intangible values in monuments and sites, Victoria Falls, Zimbabwe, 2003).

value of monuments[16], used the revealing title "The modern cult of ancient monuments" referring mainly to the historical value of an object. The monument concept very often is nothing more than "a marketing image" and is referred to as "national heritage" which according to Miles Glendinning is "just a mask for global commodification"[17]. But built heritage and sites of which we invest so much to preserve them are, after all, the vessels of cultural values, and as such, an intangible heritage. When we use scientific or technological resources to serve the goals of conservation and proper management of cultural heritage, we do so to preserve the meaning, the embedded memory and the authentic information that this heritage carries. "...to identify the ethical values, social customs, beliefs or myths of which physical heritage is the sign, the expression in time and space."[18]

The conservation level of this physical heritage has become a sign, an indicator of development per se, and thus it is considered to be one of the social and cultural scopes of political decisions taken by the governments of most European countries. In most of these cases, the original meaning, the essence of the architecture, has not been understood and what is mainly evaluated is the history of the building, its appearance, and the state of preservation of its structure. The most common aim is the enrichment and verification of the local or national history, which serves as a tourist attraction and quite often it is inaccessible even to local people, without payment. A monument in this context not only lost the meaning it had when it was built and during its life in the community, but also, it has lost any kind of use or connection (apart from its being used as a commercial object) to the people whose ancestors would have created it.

Conservation, meaning the protection and preservation of the "material signs"[19] of the past, has always been recognised as a highly civilised and generous act, rewarding with the recognition of identity and continuity on those who have applied it. The reasons that architecture has

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[16] A. Riegl, "The modern cult of ancient monuments: its character and its origin," *Oppositions*, no. 25 (1982): pp. 21-51. Originally published in 1903 as Der moderne Denkmalkultus. Sein Wesen und seine Entstehung, Wien.

[17] Miles Gendinning, "Beyond the cult of the monument," *Context*, no. 70 (2001): p. 16. The above article is the last in a series of three articles on the "cult of the modern age" published by the same author in Context 68, 69 and 70.

[18] Letter addressed to the members of ICOMOS from the President on the occasion of the 14th Assembly and Scientific Symposium

[19] UNESCO Declaration 1989

been so strongly connected with identification and place can be traced far back in time. The primordial longing to belong to a certain place and to identify oneself as Athenian or Spartan, is magnificently expressed in ancient Greek literature[20]. From the moment that people began to be civilised architecture has been the distinctive and most recognised feature of a place[21]. The cosmological concepts of a particular community that were applied to the physical landscape and at the same time were formed by it, were applied also to the city and its architectural features, the man-made landscape. Meaningful space is the product of organised societies that created a place which could accommodate their specific social principles. This meaning was expressed in forms which were not the implements but the components, the constituting parts which form the self-awareness of a society and its identity. The structure and the inter-connections of a society are reflected in its myths, legends, religion and tradition, where the embodiments of its values will take shape in the creation of literature, artefacts and architecture. The continuity of a society, which is considered to be of primal importance, depends on the endurance of these social values and their embodiments; and the most concrete of the above is the spatial meaningful connections which turn a space into a recognisable place that becomes synonymous with identity. Continuity has also always depended on and connected with memory and this memory has materialized in architectural forms.

In classical Athens (fifth century BC) during what is known as the Athenian "golden era" after the Persian wars, the Athenians carried out a grand redevelopment on the Acropolis. But the initial symmetrical plan for Propylaea (437-432 BC) that Pericles commissioned, had to be altered by its architect Mnesicles[22] in order to consolidate a part of the Mycenaean fortifications of the Acropolis which, according to the principles of the Athenians that were connected with autochony and respect for the ancestors, had to be preserved. The Athenians at their peak of their glory would still preserve with pride the memory of their ancestors, recognising themselves

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[20] Oeidipus' tragedy is understood as the necessity for being autochthonous and the Odyssey is the long journey inspired by *nostos* the longing to return home.
[21] Christian Norberg-Schulz, *Genius Loci: Towards a Phenomenology of Architecture* (London: Academy Editions, 1980).
[22] A. W. Lawrence, *Greek Architecture*, ed. Nicolaus Pevsner and Judy Nairn, Third edition ed., *The Pelican History of Art* (Penguin Books, 1973), p. 161.

as their continuity and thus proving they were autochthonous and the only legitimate inhabitants of that particular place.

The unquestionable authority derived from such a practice would be very popular in the future and would be adapted by many, and first by the Romans. The Roman emperor Hadrian rebuilt the Pantheon in the second century AD but he added an inscription to it as if the building were the construction of builders 150 years earlier[23].

Even the Emperor Justinian, who rebuilt the church of Hagia Sophia in Constantinople making it the most sophisticated and magnificent church of Christianity, erected new strong walls around Constantinople, and regained most of the Roman Empire territory, would also claim some glory from the past. Many state buildings underwent extensive reconstruction during his reign but that would be described by Procopius as restoration (*Buildings*) whilst remembering their original name and significance[24].

The modern conservation movement in Europe began when the formation of national identity in France and Britain was emerging stronger than ever. It was a time when their respective empires were waning and ideas of "purity" had begun to emerge. The past had already been successfully used to create "national identity" and "nations" in the colonies. This was attempted mainly by creating museums as a mean of proving historical continuity and authority for the colonials and by drawing maps and placing borders dividing land and forming countries.

It is quite characteristic that the definition of "history", as determined in the eighteenth century and still in use, is connected with architectural evidence (material remains) or literary sources[25]. And since building is older than writing, history seems to begin with architecture.

Intangible values of Built Heritage

ICOMOS and UNESCO have recently developed a strong interest in intangible heritage. This has been made necessary after the introduction of Japan and African countries to UNESCO by the proclamation of 1997/8. In

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[23] Jokilehto, *A History of Architectural Conservation*, pp. 4, 5.
[24] Ibid.
[25] Robin Osborne, *Greece in the Making 1200-479 B.C.*, ed. Fergus Millar, 2005 (pbk) ed., *Routledge History of the Ancient World* (New York: Routledge, 1996), p. 6.

Japan, the principle of authenticity is not appreciated and does not carry the same meaning (there is not even a word for it). In most middle and north African countries, people consider many places as important to their cultural heritage and sacred even though they do not carry any kind of permanent structure or tangible traces of human intervention.

There have been attempts also to identify the intangible values of built heritage; the memory that a building carries, the knowledge, the sacred, even the use are recognised as such intangible values. According to Mounir Bouchenaki, until recently UNESCO Assistant Director General for Culture and now Director of ICCROM, "the intangible heritage should be regarded as the larger framework within which tangible heritage takes on shape and significance"[26]. In the same article, culture is described as "a synchronised relationship involving society (that is, systems of interactions connecting people), norms and values (that is, ideas, for instance, belief systems that attribute relative importance). Symbols, technologies and objects are tangible evidence of underlying norms and values"[27]. Adding to this the definition of culture that Geertz gives, as an accumulated totality of cultural patterns which are "organised systems of significant symbols"[28] or "socially established structures of meaning" which communicate and exchange meaning with the observer or member of the society, we come to the conclusion that in order to identify culture, we are obliged to reveal the junctions, the interconnections, the routes that this net consists of to the largest possible extent.

Thus architecture, which is the built heritage and its intangible context, is recognised very much as Lethaby describes:

> "The history of Architecture as usually written is the history of the building. Architecture is the synthesis of the fine arts, the commune of all the crafts. Building is but the vehicle of Architecture, which is the thought behind form, embodied and realised for the purpose of its manifestation and transmission. Architecture then interpenetrates building not for the satisfaction of the simple needs of the

[26] Bouchenaki and Tomaszewski, "Tangible and Intangible Values of Cultural Property in Western Tradition and Science".
[27] Ibid.
[28] Clifford Geertz, *The Interpretation of cultures* (New York: Basic Books, 1973), p. 46.

> body but the complex ones of the intellect [...] architecture and building are quite clear and distinct as ideas – the soul and the body"[29].

Architecture is the idea expressed about a building which is also serving a function. The initial idea, the function and the architectural form all combine to make a unique and integrated whole that is greater than its individual components.

> "Chartres is made of stone and glass. But it is not just stone and glass; it is a cathedral and not only a cathedral, but a particular cathedral built at a particular time by certain members of a particular society. To understand what it means, to perceive it for what it is, you need to know rather more than the generic properties of stone and glass and rather more than what is common on all cathedrals. You need to understand also, [...] the specific concepts of the relations among God, man and architecture that, since they have governed its creation, it consequently embodies."[30]

Architectural remains or buildings of the past are unfortunately extensively used today as mere products without any other significance. Beautiful buildings make nice pictures for tourists and if there are many of them forming a part of a medieval town, then they can also serve as a backdrop for the dreams of a tourist. The cultural identity of a place has gradually become a commercial product and architectural heritage is regarded as being about images to look at where the tourist can pry into the past of a place.

Meaning in Architecture

Architecture geometrises the surface of the earth and articulates space. Nevertheless, architecture is not just a "container"[31] a place (*topos*) for social

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[29] William Lethaby, *Architecture Mysticism and Myth*, 1994 ed. (Solos Press, 1891), pp. 11-12.

[30] Geertz, *The Interpretation of cultures*, pp. 50-51.

[31] Aristotle gives a definition of place in his Physics book 4 (211b 10-14) "It is because it surrounds that form is thought to be place, for the extremes of what surrounds and what is surrounded are not in the same [spot]. They are both limits but on of the same thing: the form is a limit of the object, and the place of the surrounding body". Aristotle added to this definition that place is "the first unchangeable limit (*peras*) of what it which surrounds" (212a

activities and dwelling; it designates the way (*tropos*) that social activities and dwelling will take place. Architecture provides space with spatial and cultural references, thus transforming it into a place where man identifies himself and dwells. The understanding of the cultural interconnections and the way they are intertwined with spatial transformations reveals the meaning of architecture.

The intangible values incorporated within architecture are what make buildings worth preserving in the first place. Even in our largely desacralized era it is the aesthetic and cultural value of a building that strikes us instantly and consequently, we try to assert our evaluation with physical and historical documentation.

Mumford, when referring to the Acropolis of Athens states, that "for a brief generation in Athens the ways of gods, the ways of nature and the ways of men came close to a common point" describing thus a place and the idea, the intangible values that made the architecture happen[32]. But the Acropolis is better known for the perfection of the structure, the rarity of its materials, the beautiful sculpture and the geometrical applications, often referred to as optical corrections, while it could also be equally eligible for the cultural values that Mumford described as being embedded, concealed and at the same time revealed, in the refinements and forms of the buildings placed at the most sacred place for the Athenians.

"The concept of culture [...] is essentially a semiotic one. Believing, with Max Weber[33], that man is an animal suspended in webs of significance he himself has spun, I take culture to be those webs, and the analysis to be therefore not an experimental science in search of law but an interpretative one in search of meaning"[34].

20-21). For a discussion on this in Edward S. Casey, *The Fate of Place*, paperback ed. (Berkeley/Los Angeles/London: University of California Press, 1997), pp. 53-56. Heidegger has defined that Greek *peras* is "not that at which something stops but, as the Greeks recognised, the boundary [peras] is that from which something *begins its presencing*." In Martin Heidegger, "Building, Dwelling, Thinking," in *Rethinging Architecture*, ed. Neil Leach (New York: Routledge, 1997), p. 105.

[32] L. Mumford, *The City in History* (New York: Harcourt, Brace and World, 1961), p. 166.

[33] Max Weber (1864-1920): German sociologist. "Within the realm of social conduct one finds factual regularities, that is, courses of action which, with a typically identical meaning, are repeated by the actors or simultaneously occur among numerous actors. It is with such types of conduct that sociology is concerned, in contrast to history, which is interested in the causal connections of important, i.e., fateful, single events in Max Weber, *Economy and Society : an outline of interpretive sociology*, ed. Claus Wittich, trans. Ephraim Fischoff, English ed., 3 vols., vol. 1 (New York: Bedminster Press, 1968).

[34] Geertz, *The Interpretation of cultures*, p. 5.

Architecture is a primal social and personal expression of humans, one of the most profound and tangible and apart from the knowledge of construct on methods and morphology, the construing of the complex cultural patterns that created it is essential to understanding its values and preserving them.

The building is the surface, in many cases, an enigmatic one, which contains all information about the social and cultural expressions of its time and place available to be analyzed. Recognising only the surface (typology, structure), we are at risk of identifying the useless bones as the desirable flesh, like Zeus in the myth of Prometheus, as stated by Hesiod in *Theogony*[35]. Especially when we are dealing with the architecture of the past, mainly up to the nineteenth century, aspects such as sacred and traditional beliefs are the main constituents that make architecture. McEwen, in the conclusion of her book argues that certain architectural historians claim that all architecture until the eighteenth century "was built metaphysics"[36].

Memory and Architecture

The socially established structures of meaning of which culture consists, are manifest also in architecture; and because built structures are not only tangible but also more durable in time, it is understood exactly why humans would have had to have use architecture to imprint their culture and perpetuate their values, knowledge and beliefs.

Memory is vital for the continuity and the existence of the human race. Mnemosyne, the ability to remember, was a Titaness, the mother of the Muses[37] and the Muse of Architecture. Architecture was perceived as the

[35]Hesiod, *Theogony* 535-560 and commentary in Jean Pierre Vernant, *The Universe, the Gods, and Mortals*, trans. Linda Asher (New York: Profile Books, 2001), pp. 49-53. On the way Prometheus tricked Zeus to select the most appealing parcel from the ox sacrifice which contained only bones and so left for the humans the meat.

[36]Indra Kagis McEwen, *Socrates' ancestor: an essay on architectural beginnings*, 3d 1997 ed. (London: Massachusetts Institute of Technology, 1993), p. 130.

[37] Hesiod, *The Homeric Hymns and Homerica. Works and Days*, trans. Hugh G. Evelyn-White (Cambridge, MA; London: Harvard University Press; William Heinemann Ltd, 1914), p. 82. Also in *Theogony*, 52-53.
The name of this female Titan means "memory". Her main role in Greek mythology is as the mother of the Muses - nine daughters who each represented one of the arts and humanities. According to the legend, Zeus, the ruler of the Olympian gods and goddesses, had an affair with the Titan Mnemosyne, the result of which was the birth of the Muses.

Mother of the Arts so the Mother of the Muses that inspired the Arts would be the Muse of Architecture. But Mnemosyne was also the spring of the underworld Hades, from which the souls of the heroes, the souls of those who had gained eternal life would drink so that they would not forget[38]. Plato believed that knowledge is recalling in memory since we can only learn what we already know:

> "...and the soul has learned all things, there is no reason why we should not, by remembering but one single thing--an act which men call learning--discover everything else, if we have courage and faint not in the search; since, it would seem, research and learning are wholly recollection."[39]

Lethe, forgetfulness, is the other spring of Hades from which the souls should drink, the souls that will have to endure another circle of life in the world of the mortals[40]. Oblivion is thus a water of death. In contrast, memory appears as a source of immortality the *αθάνατος πηγή* that ensures for the deceased his survival, the redemption in the "beyond"[41]. The person who retains his memory after death will gain immortality, like Aethalides (meaning the sustainable) the son of Hermes who was granted by his father, a perpetual memory to make him immortal[42].

The identification of historical structures as monuments (from the Greek word μνήμη (mneme), which is memory), seems to be justified from the above connection between architecture, memory and immortality. All occidental cultures and religions have adapted and based their beliefs on the

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"Mnemosyne, mistress of Eleutherian hills,
lay with father Zeus and in Pieria gave birth to the Muses
who soothe men's troubles and make them forget their sorrows."

[38] W. K. C. Guthrie, *Orpheus and the Greek Religion* (Cambridge: Methnen, 1952), p. 177-178.

[39] Plato, Meno 81d in Plato, *Plato in Twelve Volumes*, trans. W.R.M. Lamb, 12 vols., vol. 3 (Cambridge, MA. London: Harvard University Press; William Heinemann Ltd, 1967).

[40] Pausanias, *Ellados Periegesis*, 9.39 in Pausanias, *Guide to Greece / Pausanias; translated [from the Greek] with an introduction by Peter Levi; illustrated with drawings from Greek coins by John Newberry; maps and plans by Jeffery Lacey*, trans. Peter Levi, Repr. with revisions ed., 2 vols., vol. 1, Central Greece., *Penguin classics* (Harmondsworth: Penguin, 1979).The ritual performed in Lebadeia oracle (connected with Trophonius) for the initiates was quite similar.

[41] Jean Pierre Vernant, *Myth and Thought among the Greeks* (London: Routledge and Kegan Paul, 1983), p. 82.

[42] Apollonius Rhodius, *Argonautika*, 1. 643 ff

concept of the mortality of humans and the immortality of the gods. Immortality is for humans the ultimate aim of their life and if they achieve remembrance by their descendants, it is as close as they can get to being eternal. From a very early period in mankind, architectural structures have been employed as vehicles to eternity. Pyramids[43] are the best known examples of enormous structures that were connected with death and the after-life. The megalithic structures[44] of Northern Europe, Brittany, Britain and the Western Mediterranean have been mainly identified as graves or temples connected with the after-life.

Order and Architecture

According to *Enuma Elish,* the most ancient cosmological myth[45] that has survived, Nudimmud-Ea, god of the sweet waters and of wisdom, slays his aqueous ancestor Apsu, the abyss. In so doing, Ea "sounded the coil of chaos and against it devised the artifice of the universe"[46]. Then he built a memorial to Apsu:

> When Ea had bound Apsu, he killed him.... Now that his triumph was completed, in deep peace he rested, in his holy palace Ea slept.
> Over the abyss, the distance, he built his house and shrine and therefore magnificently he lived with his wife Damkina.[47]

In this palace, the first dwelling place, which is also the artifice of the universe, Marduk, the ultimate architect of the creation is conceived to be the son of Ea and Damkina.

To build over an abyss is not only to create cosmos out of chaos, as Casey argues in his philosophical history about place: "it is to bring

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[43] Pyramids were built in Egypt from the third millennium BC.
[44] Colin Renfrew, ed., *The Megalithic monuments of western Europe the latest evidence presented by nine leading authorities, The Antiquity of man* (London: Thames and Hudson, 1983). Introduction.
[45] Enuma Elish in the translation of N. K. Sandars, *Poems of Heaven and Hell from Ancient Mesopotamia* (Baltimore: Penguin, 1971). Also see Alexander Heidel, *The Babylonian Genesis: The Story of Creation*, 2d ed. ed. (Chicago: University of Chicago Press, 1963).
[46] Enuma Elish, 75.
[47] Ibid., 75.

constructed or "devised" place out of an unconstructed material matrix and thereby to memorialize the matrix itself."[48]

Ea is the first architect and Marduk the first master builder who must construct out of something so he finds building materials from Tiamat's slain body whose corporeal depths become the resource of the civilized cosmos. Marduk's role in the *Enuma Elish* is that of the archetypal builder in the Sumerian epic, in which building is the prototypical activity. As is pointed out by Casey[49], this "constructional proclivity" contrasts with Australian aboriginal myths of origin in which building does not figure at all. Smith writes, "Enuma Elish the best known cosmogonic text from the Ancient Near East, is dominated by building[...].It is essentially, a narrative of the creation of the holy city of Babylon"[50].

In occidental civilized thought, the city is the reflection of the cosmos and cosmogony has followed the procedure of making a city.

It was already indicated in Homer and developed in Anaximander that the order (like the architectural orders or ρυθμοί (rhythms) as they are called in Greek) of the heavens, the cosmos, was not only a paradigm for every artefact in this world but that the order of the heavens was simultaneously made to appear and be discovered through the making. The coherent cosmic model of Anaximander, which he was aware could take innumerable forms, became in Plato, the paradigm for a demiurge "whose creation of *kosmos* was no longer a question of making a world appear but a matter of representing one through the duplication of an immutable pattern"[51].

These religious and philosophical principles indicate that architecture can also create new cosmos, by reshaping the environment in which humans live and by creating places which could enhance their way of living. But still, every architectural innovation would be associated with and regarded as a reflection of the cosmos, connecting mortals dwelling on earth with the divinities in the heavens and thus, participating in the sacred[52].

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[48] Casey, *A Philosophical History*, p. 26.
[49] Ibid., p. 350.
[50] Jonathan Z. Smith, *To Take Place: Toward Theory in Ritual* (Chicago: University of Chicago Press, 1987), p. 19.
[51] McEwen, *Socrates' ancestor: an essay on architectural beginnings*, p. 47.
[52] On the fourfold concept, underpinned in human thought, of earth, sky, divinities and the mortals in Heidegger, "Building, Dwelling, Thinking," pp. 102-103.

The interesting conception that every architectural structure is built over the abyss (thus concealing it), is also detected in the description of the primordial Hesiodic Chaos, which is concealed behind "bronze doors" so order can prevail[53].

The strength and durability of this primordial ontology is clearly proved in the views expressed by one of the best known but also controversial thinkers of our times; The same concept that architecture has its foundations in the Abyss that it is concealing the Chaos, has been argued by Derrida[54], who has adapted it from Heidegger's philosophy.

Philosophy and Architecture

In Plato's dialogue *Euthyphro*,[55] the greatest philosopher Socrates claims that Daedalus is his ancestor (his father was a λιθοξόος a stone-mason and a sculptor), thus placing architecture before the emergence of philosophy, recognising it as the human *techne*[56] that which makes things appear (epiphany – manifestation of cosmos) and which precedes logos[57].

Luca Pacioli[58] in the early sixteenth century suggested (following Plato's *Timaeus*) that arts and crafts and foremost architecture, by creating bodies with solid volumes and at the same time, empty spaces, gave an allusion of the "ungraspable true nature" of the primal matter of the universe as described by Plato. Architecture, along with other "mechanical arts", could become a "ladder" for the spiritualization of matter and through analysing and

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[53] "Around Tartaros runs a fence of bronze and Night spreads in a triple line all about it, as a necklace circles the neck. Zeus imprisoned there the Titans who had fought against him; they are hidden in the misty gloom in a dank place at the ends of the Earth. They may not pass the imprisoning fence; Poseidon fixed gates of bronze to their prison. And Kottos, Briareos, and Gyes are there, ever guarding them."in Hesiod, *The Homeric Hymns and Homerica. Works and Days*. Theogony 726-736

[54] Mark Wigley, *The Architecture of Deconstruction Derrida's Haunt* (MIT Press, 1993), pp. 14 ff.

[55] Plato, *Euthyphro*, 11c-e in Plato, *Plato in Twelve Volumes*. vol. 1

[56] Greek *Techne* derives from the same root with the verb *tikto* "to bring forth, to produce" [to give birth]. "To the Greeks techne means neither art nor handicraft but rather: to make something appear, within what is present, as this or that, in this way or that way. The Greeks conceive of techne producing, in terms of letting appear. Techne thus conceived has been concealed in the tectonics of architecture since ancient times." In Heidegger, "Building, Dwelling, Thinking," p. 108.

[57] According to McEwen "...in doing so suggests – not without irony, derision being a familiar undercurrent of the Socratic tone- the existence of an ancestral blood tie between architecture and philosophy, between the creations of Daedalus and speculative thought." In McEwen, *Socrates' ancestor: an essay on architectural beginnings*, p. 2.

[58] Luca Pacioli was an Italian Franciscan professor of Theology who wrote in 1498 a treatise on geometry *Divina Proportione* devoting a whole section to architectural applications of the golden section.

understanding the applied geometry, could "demonstrate how sub-lunar multiplicity could be reconciled with the divine monad, thus becoming vehicles for the knowledge of Truth."[59]

Architecture by its origin is the manifestation of order, of man-made order, that forms, gives shape to the world and at the same time, declares and displays man's abilities, memorises his achievements and thus gives also meaning to the world. And this is true for all kinds of architecture, monumental and rural but of course, on a different scale. Monuments, whether they are creations of a society or individuals, have been built to manifest notional principles and values. They are definite as structures but quite indefinite as embodiments, manifestations of meaning. They serve as historical and social imprints and as gates of access to the intentions and the cultural context of their creator(s).

The stress on the necessity of their conservation merely as physical objects, indicates that they are not quite understood as carriers of intangible values. Their preservation, instead of acting as (or in addition to) a reinforcement of memory can also act to broaden and deepen our understanding and awareness. Instead of using historical buildings as occasions which enhance nostalgia, duty, intimidation and seclusion, they can serve as causes for prospect, impulsion, expansion and evolution.

Monuments like all artefacts are man-made phenomena and at the same time, epiphanies of cosmos, the manifestations of the invisible. «Οψεις γαρ των αδήλων τα φαινόμενα» is the definition that Anaxagoras gives for phenomena, meaning that they are "manifestations of the invisible" or even more precisely appearances of the concealed; of what is not revealed[60]. The efforts of the conservator to recognise the phenomenon is an attempt to unveil the hidden intentions, concepts, knowledge and beliefs of the society that has created it. This re-cognition is limited by the allowances given from the definition of the typology, the categorisation of the morphology and the historical accession of the architecture, based on the documented authenticity and the pre-accepted academic defined rules on aesthetics.

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[59] Alberto Perez-Gomez, "The Glass Architecture of Fra Luca Pacioli," in *Chora 4: Intervals in the Philosophy of Architecture*, ed. Alberto Perez-Gomez and Stephen Parcell (Montreal: McGill-Queen's University Press, 2004), p. 248-49.

[60] Fragment from Anaxagoras in XXI Sextus Empiricus, VII. 90. Quote from lectures given in the postgraduate course on Philosophy of Science at the School of Architecture at the National Technical University in Athens by Dr. Koutougkos in 2003-04.

The potential to access the essence, "the true meaning" of architecture of the past, depends entirely on the capacity of the researcher to overcome the established norms and the evident, the preconceived conceptions and to address the monument as a testimony to and an embodiment of personal and/or social passages, routes. These passages have to be fully investigated and appreciated by following their spatial and temporal dimensions throughout their length and width in time and space, revealing their direction and velocity (where they were initiated, how they developed and where they were heading to), and the intentions of their creators, their essence and meaning, if they are to be connected to today and to serve as cultural "property".

Subject of the research

The architectural phenomenon that the researcher has chosen to explore is the ancient free-standing isolated towers that exist in several areas in Greece and in particular, the towers of the island of Siphnos which belongs to the Cycladic complex in the Aegean Sea. These towers are found in groups and are quite distinctive from the military towers as has been demonstrated by Nowicka in her seminal treatise about the Hellenic towers[61] because 1) they are not connected with any other defensive structure (walls, military camps, etc) 2) they are not placed on natural stronghold positions or at crossroads or on main ancient routes and 3) they have openings, the main entrance in on the ground floor.

The single or free-standing towers under examination, can be square or circular in plan, are almost always made of limestone or marble masonry and do not carry any ornaments or decorative features.

Their distribution over the Greek territory seems random but some observant scholars have already pointed out that most of them are to be found around mining areas.

These towers have relatively recently (in the last eighty years) attracted the interest of researchers and have been the subject of investigation. In spite of the existence of several articles and papers on the subject, (see Chapter 2) their original purpose is still not entirely clear and as

[61] M. Nowicka, *Les maisons a tour dans le monde grec, Bibliotecha Antiqua 15* (Wroclaw: Zaklad Narodowy imienia Ossolinskich-Wydawnictwo Polskiej Akademii Nauk, 1975), pp. 31-34.

will be shown, most of the suggested propositions are problematic and as the most recent publication on Greek towers suggests, "sufficient reasons for their construction have not been detected yet"[62].

The reasons for selecting the Siphnos towers are: 1) they are better documented than others that exist in the hellenic region e.g. in Thasos or Kea, 2) they seem to have been built earlier than in the other regions 3) the phenomenon of their existence seems to be more persistent there than in other places (higher density) and therefore 4) if a theory concerning the towers cannot be applied and verified for the Siphnos towers, then it is not worth attempting to apply it anywhere else in Greece.

The research has focused on the intangible values that these towers carry and has attempted to identify them through an investigation of the memory embedded in the form and the typology. In order to reveal the essence of their architecture and to understand the intrinsic factors of their creation the researcher wanted to be able to detect and recognise the intentions of the society which had built them originally. The investigation had to penetrate the surface, the appearance of the phenomenon and to analyse the social structures and patterns, which consist of the cosmological beliefs, whether philosophical or religious, the political status, the technology and knowledge that was acquired at the time and the common sense and understanding of the people. The researcher will attempt to recreate the whole cultural "web of signs" in a comprehensive piece of anthropological research.

The aim of this research is to approach and understand the architecture of these towers as a manifestation, an incarnation of the culture of their time, by analysing the social and religious patterns, the beliefs and knowledge of the communities that created them. This analysis will give evidence and reveal the intentions of their creators and provide sufficient and credible documentation to support the proposed theory that these towers were not secular but sacred buildings and that they had multivalent connections with the mines and the mining exploitation on the island of Siphnos.

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[62] Lila Marangou, *Amorgos 2. The Ancient towers* (Athens: Archaeologiki Etaireia, 2005).

CHAPTER 2
The Greek Towers – literature review

In the comprehensive historical survey of towers around the world, by Erwin Heinle and Fritz Leonhardt[63], it is reported that in 2250 BC, round buildings were erected on the Cyclades as residential towers for the princes. No reference for this information was given but most probably Erwin Heinle and Fritz Leonhardt were following the outdated publication of Dragatsis[64] (1920). Their presentation suggested that there is no evidence of tower-like structures on palaces or, several centuries later, on rulers' houses and villas or in cities. "But there were no towers built during this (1500-500 BC) flourishing era of Greek architecture and we seek reasons for their absence." In their effort to find a better explanation, they quote Hans Koepf[65], who states in his book *Structure and Form* that "in antiquity towers at best occurred in city walls and city gates". Their argument is based on Revesz-Alexander, who says much in her book[66] about the meaning of the tower. "Among other things it means that exaggeration and extravagance can be associated with it." The author devotes an entire chapter to the question of why Greek architecture shows no evidence of towers. Right at the beginning, she asserts that Greek art lacked any inner impulse toward the construction of the towers, as it was opposed to one-sidedness, extremes, the superfluous, the over laden and the exaggerated. Revesz-Alexander's argument continues by stating that even in the post classical era the idea of order, law, and the whole was decisive for Greek culture. Finally, man was the measure of all things, therefore, the immoderate, stubborn, heaven-storming drive toward height was not a Greek propensity; self-containment was Greek, while the opposite was not. According to Revesz-Alexander, Greek buildings were meant to be seen close up and not from afar, as in the case of towers. Heinle and Leonhardt believe that "groups of buildings even

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63 Erwin Heinle and Fritz Leonhardt, *Towers. A historical survey*, trans. Martha Humphreys (London: Butterworth Architecture, 1989), p. 36.

64 I. C. Dragatsis, "The Island Towers: the case of Siphnos (In Greek)," *Proceedings of the Archaeological Society (PAE)* (1920): pp. 147-172. Ι. Χ. Δραγάτσης, Οι Πύργοι επί των νήσων και ιδία της Σίφνου Π.Α.Ε. 1920.

65 Hans Koepf, *Struktur und Form. Eine architektonische Formenlehre* (Stuttgart, Berlin, Köln, Mainz: Kohlhammer, 1979).

66 Magda Revesz-Alexander, *Der Turm als Symbol und Erlebnis* (Haag: Nijhoff, 1953).

when fulfilling a divine function were designed more in the spirit of serving than dominating; hence they constitute a completion of the image of nature. This is in contrast to churches and towers, which compete with the image of nature. The contradiction in regard to the Pharos tower[67] has been watered down to an interpretation that it is not classical Greek but Hellenistic[68]. The authors emphasise that the greatest achievement of the Greek world was the development of personality and personal freedom in all areas of life and this attitude was not compatible with the erection of high dominating buildings[69].

These concepts are related to an analysis of the symbolic dimensions of the architectural form of the tower which, according to a recent study on the phenomenon of a number of towers built between the twelfth and the fourteenth century AD in Tuscany, had a considerable psychological importance and they were often selected, especially when found in large numbers, for what they represent and not for their strategic function[70].

From the above statements it is obvious that the form of the tower as a powerful image and a symbol has overwhelmed the tower as a built structure, to the point that Erwin Heinle, Fritz Leonhardt and Revesz-Alexander cannot recognise and comprehend the existence of the towers as an architectural phenomenon in ancient Greece.

Literature history of Greek towers

From the beginning of this research, it has been quite evident that the Greek towers have been brought to the attention of scholars and state officials relatively recently compared with other ancient Greek architectural remains, and only at the end of the nineteenth century and the beginning of the twentieth, apart from a few exceptions. This fact is even more apparent when the bibliography on the subject is compared with the literature on other architectural remains of ancient Greek civilization. Scientific research has

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[67] Pharos is the name and location of one of the well-known towers in Siphnos
[68] Heinle and Leonhardt, *Towers. A historical survey*, p. 36.
[69] Ibid. p. 36
[70] "Although the immediate strategic importance of towers was limited in towns, their psychological importance was quite considerable: a fortress-house tower was effective by virtue of its very existence and its importance increasingly shifted from the functional to the representative" in Klaus Tragbar, *Vom Geschlechterturm zum Stadthaus. Studien zu Herkunft, Typologie und städtebaulichen Aspekten des mittelalterlichen Wohnbaus in der Toskana (um 1100 bis 1350)*, ed. Joachim Poeschke, *Beiträge zur Kunstgeschichte des Mittelalters und der Renaissance, Band 10* (Munster: Rhema, 2003), p. 323.

distinguished the towers as having pure military purpose[71] from those that are self-standing and isolated and yet it seems that they had mainly other purposes (Figure 1).

Figure 1. Self-standing military ancient tower in Achinos

This second type of towers is found in large numbers and in certain areas across the Hellenic region like the ancient Chersonnesos[72] (Crimea) in

[71] These towers have been identified and described in many cases. The most characteristic feature that distinguishes them as defensive is the fact that their main entrance is never placed on the ground floor level. See in F. E. Winter, *Greek Fortifications* (Toronto: University of Toronto Press, 1971), pp. 88,126,164,167 ff. Also in Arnold W. Lawrence, *Greek Aims in Fortification* (Oxford: Oxford University Press, 1979).

[72] Jan Pecirka, "Homestead Farms in Classical and Hellenistic Hellas," in *Problemes de la terre en Grece ancienne*, ed. M. I. Finley, *Ecole Pratique des Hautes Etudes - Sorbonne* (Paris: Mouton & Co, 1973), p.140-41 "On the southwestern tip of the Crimea, the Heraclean

modern Turkey and in the Aegean islands like Thasos[73], Andros[74], Kea[75], (Figure 2) Amorgos[76], Siphnos,[77] and also in Attica[78].

Figure 2. Ancient towers in Kea

The study of the ancient Greek towers presents certain difficulties. The name πύργος used in the ancient written resources, is used to describe a variety of structures without specifying their purpose. The meanings, according to the context, vary from a notional divine fiery dwelling in Pythagoras's "Zanos pyrgos", to the invulnerable (asylum) tower of Artemis in Pergamon[79] and the place where women worked and lived, in a text attributed to Demosthenes[80].

Peninsula, in what used to be the *chora* of Chersonesos, chance has preserved for us on an area of more than ten thousand hectares a highly interesting complex of ruins, the most prominent feature of which is the remains of several tens of towers."

[73] J. F. Baker-Penoyre, "Thasos," *Journal of Hellenic Studies* XXIX (1909), A. Bon, "Les ruines antiques dans l' ile de Thasos et en particulier les tours helleniques," *Bouletin de Correspondance Hellenique (BCH)* 54 (1930), Robin Osborne, "Island Towers: the Case of Thasos," *Annual of the British School at Athens* 81 (1986).

[74] A. Koutsoukou and C. Kanellopoulos, "Towers from Northwest Andros," *Annual of British School at Athens* 85 (1990).

[75] Demetra Maurokordatou, "The Ancient tower Ag. Marina at Kea" (Master thesis, Technical University of Athens), Lina Mendoni, "Pyrgoi tes Keas," in *Kea - Kythnos*, ed. A. Mazarakis-Ainian L.G. Mendoni (KEPA/EIE:Meletimata, 1998).

[76] Marangou, *Amorgos 2. The Ancient towers.*

[77] John H. Young, "Ancient Towers in Siphnos," *American Journal of Archaeology* 60 (1956). Norman Ashton, *Siphnos. Ancient Towers B.C.* (Athens: 1991), Gordon N. Davies, "Economic Geography of the Ancient Greek Countryside: A re-examination of monumental rural sites on the island of Siphnos" (PhD Thesis, University of Oxford, 1998).

[78] John H. Young, "Studies in South Attica: Country Estates at Sounion," *Hesperia* 25 (1956).

[79] From a Roman inscription found on a tower in Pamphylia "...Αρτέμιδι Περγαία ασύλω τον πύργον..." republished and commentated in A. M. Woodhouse, "Asylotos," *The Classical Review* (1932).

[80] The various meanings of the word *pyrgos* are conclusively given in Henry George Liddell and Robert Scott, *A Greek-English Lexicon revised and augmented throughout by. Sir Henry Stuart Jones with the assistance of Roderick McKenzie* (Oxford: Clarendon Press, 1940). This lexicon gives a collection of the various meanings of the word πύργος in ancient literature.

The studies on the Greek towers have come up with various and sometimes contradictory theories in attempting to date and explain the original purpose of these exemplary structures. The dating varies from the Mycenaean era[81] to the Imperial Roman period and the proposed uses for these towers have almost outnumbered the towers themselves. The suggested functions have been from military to symbolic and from farmstead houses to tombs[82].

There are no accounts or descriptions of these towers from ancient written sources, apart from a few inscriptions[83] and a text that is attributed to Demosthenes[84]. The information given from the inscriptions is mainly about their construction and not their purpose, with the exception of a recent find dating from the archaic period that refers to φυλακήν (phylakin), which could be a safe for something valuable or a guard-post[85].

There is also a poem referring to the island towers written by Kallimachos[86] who lived in the first half of the third century BC[87] mentioning the towers on the Cyclades while wondering whether they can be more powerful or stronger than Apollo at Delos. The word πύργος[88] is first used in

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[81] The now considered as absolutely wrong dating was proposed in Dragatsis, "The Island Towers: the case of Siphnos (In Greek)."

[82] Manolis Korres, "The tower of Agia Triada in Amorgos," (National Technical University of Athens, forthcoming). An account of all the proposed theories about the purpose(s) of the towers is given in detail at a reference.

[83] Most of these inscriptions have been published in Franz Georg Maier, ed., *Griechische Mauerbauinschriften*, 2 vols., vol. 1, Texte und Kommentare, *Vestigia : Beitrage zur alten Geschichte* (Heidelberg: Quelle & Meyer, 1959) pp. 250 ff. Also in Mendoni, "Pyrgoi tes Keas.", Nowicka, *Les maisons a tour dans le monde grec.* Also in Young, "Studies in South Attica: Country Estates at Sounion," pp. 133-134.

[84] Demosthenes, Speeches 41-50, speech 47, section 56 (see below)

[85] This information about an archaic (sixth century BC) inscription that has been found in a tower in Kea was given to the author by Dr L. Mendoni during a scientific symposium held in Siphnos in June 2006. The inscription is still under consideration and has not been yet published.

[86] Kallimachos, c.294 - c.235 BC, Greek Scholar. Kallimachos, or Callimachus, was born in Cyrene in North Africa, he went to Alexandria, where King Ptolemy Philadelphus of Egypt made him director of the library. Kallimachos became the organizer of the great library at Alexandria where he created a scientific library index. He was also a prolific writer of poetic works.

[87] Callimachus, Hymn to Delos, 2-4 and 23-26
"...η μεν άπασαι Κυκλάδες, αι νήσων
ιερώταται είν αλί κείνται, εύυμνοι...[ ] ...
κείναι μεν πύργοισι περισκεπέεσιν ερυμναί,
Δήλος δ΄ Απόλλωνι τι δε στιβαρώτερον έρκος;
Τειχέα μεν και λάες υπαί ριπής κε πέσοιεν
Στρυμονίου βορέαο¨ Θεός δ΄αεί αστυφέλικτος.

[88] Πύργος:
A. tower, esp. such as were attached to the walls of a city, Il.7.219, al., Hes.Sc.242, Hdt.3.74, al., Th.2.17, al., Plb.5.99.9, etc.: in pl., city walls or ramparts with their towers, Il.7.338, 437; cf. 22.447; Od.6.262; E.Hec.1209; Pl.Criti.116a.

literature in the Iliad by Homer, and has the same origin with burg which is considered to be the Indo-European or pre-Hellenic word *burg*-o, but there is not a definite accepted derivation of the word[89].

Figure 3. Ancient tower in Amorgos

The first descriptions of the towers come from the accounts of foreign travellers during the nineteenth century who visited Greece after the end of the Independency war against the Ottoman Empire and the constitution of the Modern Greek state in 1830. L. Ross,[90] a German scholar who followed the new German King of Greece and visited with him most of the islands describes some of them as "Hellenic" towers that were built as refuges from the pirates. A few years later, A. Conze[91] (1860), G. Perrot[92] (1864) and C.

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b. movable tower for storming towns, X.Cyr.6.1.53, 6.2.18; p. 42.3.
c. tower on the back of war-elephants, Arr.Tact.2.4.
d. Ζανός πύργος, Pythag. name for the central fire of the universe, Arist. Fr.204.
2. metaph., tower of defence, Od.11.556; Alc.Supp.1a .10; E.Alc.311, cf. Med.390; Trag.Adesp.392; a tower of defence from deaths, S.OT1201 (lyr.).
3. the part of a house (prob. a separate building) in which the women lived and worked, Dem.47.56 ; esp. if unmarried, as Hero in her tower, Musae.32,187, cf. Philostr.Jun.Im.1; of the workman's hut of Timon the misanthrope (which also became his tomb, cf. Luc.Tim.42), Paus.1.30.4, cf. AP 7.402 (Antip.); outbuildings, esp. if used in industry, LXX Is.5.2, Mi.4.8, PStrassb.110.6 (iii B.C.), BGU1194.9 (ii B.C.), 650.8 (i A.D.), POxy.243.15 (i A.D.), Ev.Marc.12.1, Ev.Luc.14.28, PGiss.67.16 (ii A.D.), IG22.2776.65 (ii A.D.); PLond.2.371.3 (i A.D.)
II. part of an army drawn up in close order, column, Il.4.334,347.
2. at Teos, a division of the people, CIG3064,3081, al.
III. dice-box, AP9.482.24 (Agath.); cf. Lat. pyrgus.
Liddell and Scott, *A Greek-English Lexicon revised and augmented throughout by. Sir Henry Stuart Jones with the assistance of Roderick McKenzie.*

[89] Papyros – Grande Encyclopédie Larousse - Encyclopaedia Britannica. Etymological Lexicon in the Greek Edition, volume 51, Athens 1996

[90] L. Ross, *Reisen auf den griechischen Inseln des aegaeischen Meers*, vol. 1 (Stuttgart/Tuebingen: 1840).

[91] A. Conze, *Reise auf den Inseln des Thrakischen Meeres* (Hanover: 1860).

Fredrich[93] (1908) published their own memoirs after visiting Thasos and the islands of North Greece. In 1885, J. T. Bent[94] published his notes on travelling around the Cyclades. He gives quite a few descriptions "of the numerous round Hellenic towers of white marble" and devotes separate chapters to the most impressive ones; Agia Marina at Keos "one of the most perfect Hellenic watchtowers in existence"; on the round Hellenic tower of St Peter at Andros, Bent gives an extensive description of it as "one of the most interesting relics of ancient Greek strategic art"; the Plaka and Chimera tower in Naxos "round and of white marble and principally worthy of notice for its spiral staircase", Torlaki and Holy Trinity towers in Amorgos, Thermia tower in Kythnos "just another instance of the numerous watchtowers in the islands placed to protect a fertile valley as well as the only stream near the town". He describes them as "gaunt, imposing looking edifices" as a "peculiarity of the islands" and he refers to them generally as watchtowers. Construction details, measurements of the ruins and legends about the towers complete the narration.

In 1909, an article about the towers of Thasos (an island of Northern Greece, close to Thrace) was published by John Baker-Penoyre[95], who gives detailed geographical remarks and corrects the mistakes of his predecessors. He observes the remains of twenty "Hellenic towers", as he calls them, and gives measured, to scale sketches of most of them, but he seems to be puzzled about their original purpose. He does not hesitate to note while describing some of them that "...these are the most easterly of the long series of towers that kept ward over the ravines of the S. coast. What is necessary to guard in both ancient and medieval times in this secluded spot, it is difficult to say. The only exits from [...] the beach, are too steep and tortuous to have been ever much used"[96]. But his greatest contribution to our knowledge about the towers is his finding of an inscription at the tower of Pyrgos. The inscription on a block, which once was the lintel of the entrance

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[92] Georges Perrot, *Memoire sur l' isle de Thasos*, vol. Tome 1er, 2e serie, *Archives des Missions Scientifiques* (1864).
[93] Fredrich C., Thasos, Athenische Mitteilungen, vol. xxxiii, 1908.
[94] J. Theodore Bent, *The Cyclades* (London: 1885), pp. 19-40 on Siphnos.
[95] Baker-Penoyre, "Thasos," pp. 202-250.
[96] Ibid.: p. 235.

was found in situ but broken in two pieces. It has been dated to the late sixth century BC[97] and the lettering is the follow:

[Ἀ]κηράτο ε[ἰ]μί το μνήμα το Φ[ρα]σιηρίδο
κείμαι δε έπ΄ άκρο ναυς[τ]ά[θ]μο σωτήρ[ι]ον
νηυσίν τε κα[ι ν]αυτήσιν αλλά [χ]αίρετε[ε]

The translation is «I am the (commemoration)[98] tomb of Aceratos the Frasierid, standing at the road stead's utmost point to bring safety to ships and to sailors; but farewell". This is the only inscription that has been found on any tower and even though Baker-Penoyre relied on this translation to refer to that particular tower as a lighthouse, later scholars argue that it was a dedication epigram for a cenotaph or memorial and not for a lighthouse, which probably marked the shore for the sailors[99].

Baker-Penoyre dates the towers according to their construction and masonry at three periods:

a) good roughly dressed ashlars with a tendency to polygonal as archaic (contemporary to the earliest work on the acropolis at Limena),

b) stone faces carefully dressed and jointing accurately executed as classic (the best period of Greek building)

c) a group that shows engineering skill and accuracy but lacks the refining finish of the previous ones and

d) large stones but roughly trimmed to rectilinear form, vertical surfaces are undressed and they are juxtaposed rather than jointed.

Most of the square towers belong to this last set of construction. About their purpose, he suggests they were mainly (nearly half of them) lighthouses, four of them were built as coast defences and the others were shelters for the people or forts to keep the roads and passes safe. There is also a sketch-map of Thasos by the author where the "Hellenic" remains are marked (Figure 4).

In 1905, Dawkins and Wace[100] added to the list of travellers who published their notes from their trip to the Cyclades. They record a few

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[97] Transcription and restoration by M. N. Tod, in Ibid.: p. 96.
[98] The word μνήμα in Greek means memorial, commemoration and in extend it also has the meaning of "tomb".
[99] Young, "Studies in South Attica: Country Estates at Sounion." p.132
[100] R.M. Dawkins and A.J.B. Wace, "Notes from the Sporades," *Annual of the British School at Athens* 12 (1905-1906): pp. 151-174.

towers "which are very common throughout the islands of the Aegean"[101], and they report three in Keos, two in Seriphos, one in Kythnos, one in Naxos, about a dozen in Siphnos, two in Skiathos, four in Skopelos, one in Skyros and twelve in Amorgos, two in Leros and they assume there must exist "doubtless many others"[102]. They describe these towers as round or square standing either alone or with an adjacent court[103].

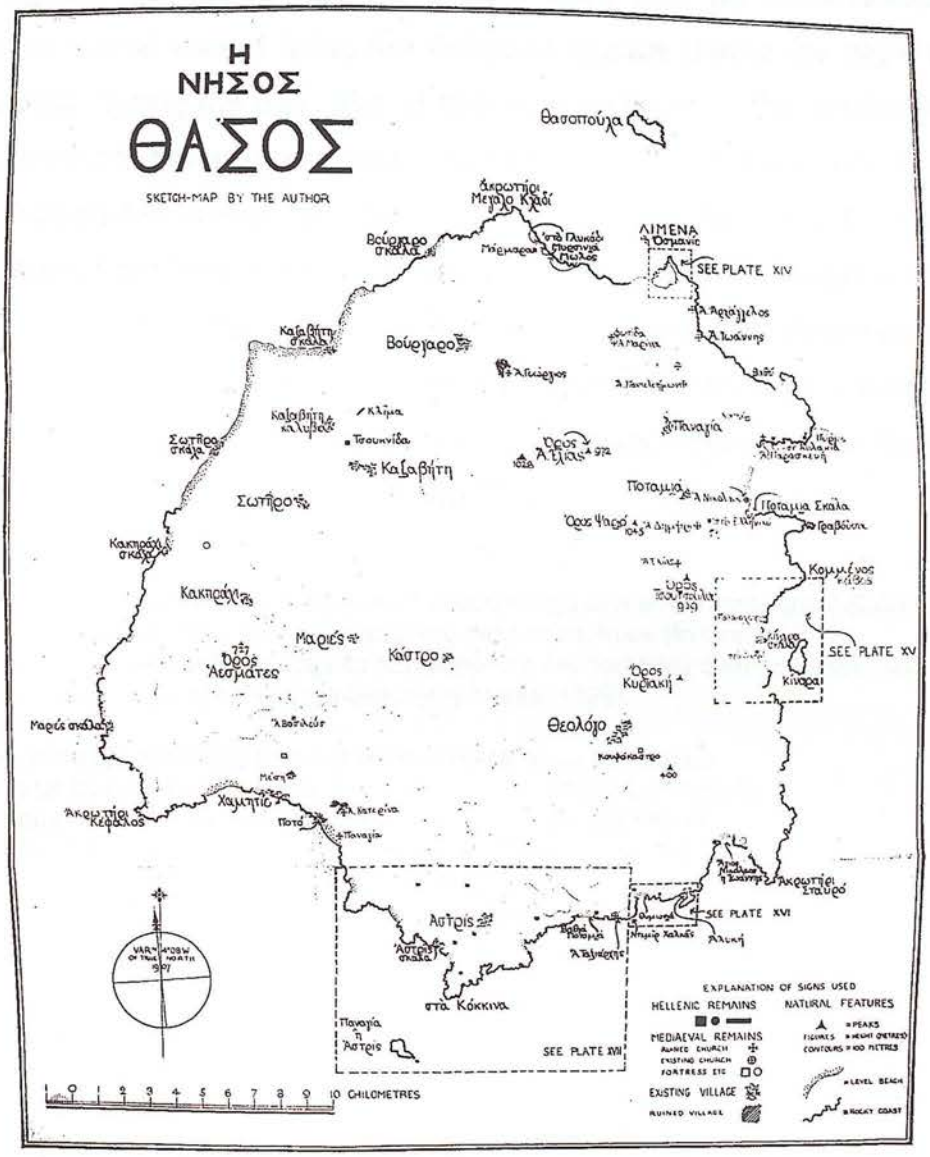

Figure 4. Sketch map by Baker Penoyre with locations of towers in Thasos

[101] Ibid.: p. 156.
[102] Ibid.: p. 157.
[103] Ibid.

The first attempt to date them on archaeological evidence comes from a Greek archaeologist (Dragatsis)[104] who explored Siphnos between 1915 and 1920. He was the first to undertake excavations at towers in Siphnos. Unfortunately, he didn't use stratigraphical methodology and his findings cannot be accurately dated. He came up with an extraordinary suggestion that the towers date, at least some of them, from the Mycenaean period (third to second millennium BC)!

Dragatsis suggested that the towers were built for communication purposes as signal towers using fire (beacon) signals during the night and smoke signals during the day. (But at that time he knew of the existence of about 20 towers in Siphnos, whereas now we know that there are over 70.) In order to support his theory, he refers to the part of the Iliad (Σ. 211) where the messages from Troy were transmitted on the mainland through beacon signals. He also mentions the very poetic narration of Aeschylus in *Agamemnon* (282) that refers to a detailed account of the numerous beacons along the coastline that had transmitted the glorious victory of the Greeks and the conquest of Troy to Clytemnestra [105].

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[104] I. C. Dragatsis, "Investigations in Siphnos," *Proceedings of the Archaeological Society (PAE)* (1915), Dragatsis, "The Island Towers: the case of Siphnos (In Greek)."

[105] Aeschylus, *Aeschylus, with an English translation by Herbert Weir Smyth*, 2 vols., vol. 2. Agamemnon (Cambridge, MA: Harvard University Press, 1926).
Clytaemestra:
Hephaestus, from Ida speeding forth his brilliant blaze. Beacon passed beacon on to us by courier-flame: Ida, to the Hermaean crag in Lemnos; to the mighty blaze upon the island succeeded, third, [285] the summit of Athos sacred to Zeus; and, soaring high aloft so as to leap across the sea, the flame, travelling joyously onward in its strength
the pinewood torch, its golden-beamed light, as another sun, passing the message on to the watchtowers of Macistus. [290] He, delaying not nor carelessly overcome by sleep, did not neglect his part as messenger. Far over Euripus' stream came the beacon-light and signalled to the watchmen on Messapion. They, kindling a heap of [295] withered heather, lit up their answering blaze and sped the message on. The flame, now gathering strength and in no way dimmed, like a radiant moon overleaped the plain of Asopus to Cithaeron's ridges, and roused another relay of missive fire. [300] Nor did the warders there disdain the far-flung light, but made a blaze higher than their commands. Across Gorgopus' water shot the light, reached the mount of Aegiplanctus, and urged the ordinance of fire to make no delay. [305] Kindling high with unstinted force a mighty beard of flame, they sped it forward so that, as it blazed, it passed even the headland that looks upon the Saronic gulf; until it swooped down when it reached the lookout, near to our city, upon the peak of Arachnaeus; and [310] next upon this roof of the Atreidae it leapt, this very fire not undescended from the Idaean flame.
Such are the torch-bearers I have arranged, completing the course in succession one to the other; and the victor is he who ran both first and last.1 [315] This is the kind of proof and token I give you, the message of my husband from Troy to me.

But if we follow the Aeschylus' narration we discover that Thasos and the Cyclades are not really mentioned and that their towers would not be necessary for the transmission since the route followed for the beacon fires went from Lemnos to Athos, then Euboea, Boiotia, Attica, and through (the islands of) Saronicos finally reaching the Argolid.

However, Dragatsis' report is very useful because he gives an (albeit confused) account of the findings and measured drawings of two towers in Siphnos and of the double cistern he discovered under the floor of the White Tower. The findings include a female head of an archaic Cycladic idol made of white marble and a terracotta idol of a female figure[106].

Antoine Bon[107] in his account of the towers on Thasos in 1930 came to the conclusion that they had been used as refuges or strongholds that protected the country population.

Bon's suggestion has been reinforced by L. Lord[108] who studied in the same year (1930) the pyramidal structures that exist in Argolid along with a couple of square towers which he named blockhouses. He dated the blockhouses to the fourth century BC, according to masonry and pottery evidence, and suggested that they were housing a small garrison of about a dozen people to safeguard the area and the road that might have existed close by[109]. The dimensions of one of these towers are 9.00m x 9.20m inside and the thickness of the walls is 1.30m. Internally they were divided in four rooms and the upper part of the tower was most probably constructed of timber or mud bricks (Figure 5. Pyramid in Argolid).

It must be mentioned here that the towers in question existing in Thasos, Cyclades and Attica were much smaller and this is the reason that this proposition (that these too were guard houses) was rejected by subsequent studies, along with the suggestion that the towers were forts (they could not have been because they do not share any feature with military single-standing towers, because they have an entrance at ground

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[106] Dragatsis, "The Island Towers: the case of Siphnos (In Greek)," p. 158.
[107] Bon, "Les ruines antiques dans l' ile de Thasos et en particulier les tours helleniques."
[108] Louis E. Lord, "The Pyramids of Argolis," *Hesperia Journal of the American School of Classical Studies at Athens* 7, no. 4 (1938): pp. 481-528.
[109] Ibid., p.527 they must all (blockhouse and pyramids) have been guard houses capable of accommodating a small garrison who could control the countryside.. Without loopholes for arrows and with no defence battlements they could hardly resist a serious attack from a superior force[...]belong to a period when the country needed patrolling and perhaps tools could be levied on travellers. Why pyramids [...] still unanswered.

level and were no deferent to the approach of an enemy). The towers found in Argolid, were identified as military watch towers by Lord but they were big enough to accommodate a small garrison. They also belong to a much earlier chronological period.

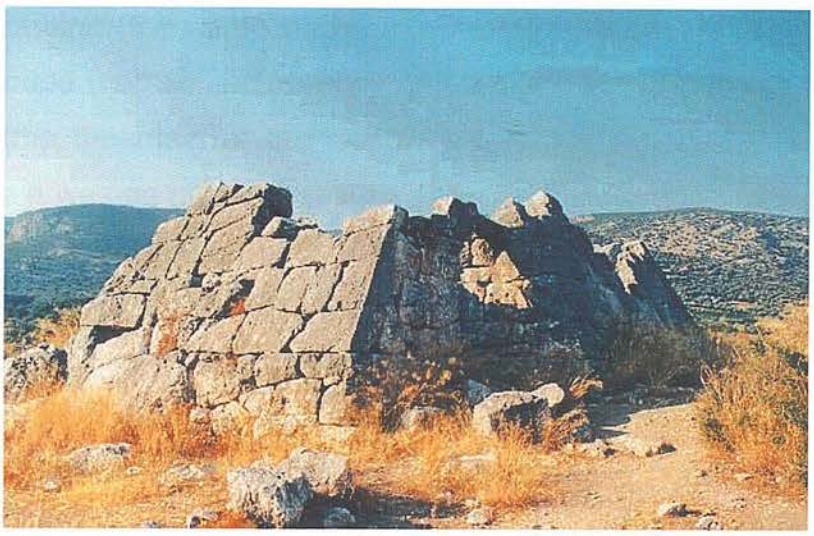

Figure 5. Pyramid in Argolid

Attica towers and the silver mines in Laurion

In 1941, M. Crosby[110] gave a reading and translation of a Poleitai record of the year 367/6 BC. The second half of the stele (found in 1938 beneath the floor of Tholos in the Athenian Agora) records the mining leases for the year and is the earliest record of this type found and the only complete one. Only 17 mines were leased, while later, in in 355 BC, they were more than 80, a fact which indicates a revival of the mining workings in Laurion about the middle of the fourth century. There is a reference to a tower[111] as a landmark and it is noted that "the names of mines derived from divinities or heroes are found repeated in different districts [...] not possible to identify [...]". The names derived from human beings, the owners perhaps, are possible to identify.

Of the 29 names mentioned in the text as leaseholders of mines or as property owners in the mining district, sixteen are known from other

[110] Margaret Crosby, "A Poleitai Record of the year 367/6 B.C. (with "Addendum: A Topographical Note" by John Young)," *Hesperia* 10 (1941): pp. 14-30.
[111] Ibid. .p.19 "In the fifth prytany, that of Aigeis [...] of which the boundaries are on the east of a tower and house of Kallias of Lamptrai..."

archaeological evidence and of these, eleven are members of wealthy families, wealthy enough to serve as trierarchs or to represent in Agora their deme. Kallias of Lamptrai leaseholder of a mine in Laurion and owner of a tower and a house in Besa was also a trierarch in 353/2 BC[112].

In the Addendum to the same article, Young[113] suggested that the word Laurion (the name of the mine area in Attica) is an adjective formed from *λαύρα* (narrow lane or alley). As a place name, it is used as "to Laurion oros" (the mountain of the narrow ways). He also wondered whether the mountain was so named because of the stream-beds which carve the entire range into a network of defiles and cliffs or whether the *λαύραι* (laurae) were actually mining galleries[114] (certainly a better use of the word). The Alexandrian lexicographer Hesychius (fifth century AD) and the Byzantine lexicographer Souidas (eleventh century AD), both confirm that the word "laura" means gallery and in certain cases, mine[115]. So Laurion is a place with underground galleries, a place with mines. There is evidence[116] that in 1350 BC, there is already extraction of silver by the Mycenaeans. The silver production in 1100-800 BC has been confirmed by the lead-monoxide findings of J. Bingen[117]. Xenophon in 355 BC informs us that "the mines have been worked for many generations"[118].

The Laurion mines were producing silver and lead (as a side product) in antiquity and they have gave the Athenians the power and wealth that made them a prosperous and dominant city-state. K. Konophagos[119] published extensive research on the Laurion mines and the methods of extraction in antiquity. He emphasised the significance of the metals and their

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[112] Ibid., p.26
[113] Ibid., p.28
[114] Ibid.: p. 28, n. 19."Elderkin (Kantharos, pp 199ff) connects Laurion with Labyrinthos thus giving the name a pre-Greek origin. Prehistoric galleries are not impossible; the importance of Thorikos in this period must be explained and the large numbers of lead bars found in Mycenaean contexts on the slopes of the Acropolis."
[115] M. Rangabe, *Du Laurium* (Paris: Imprimerie Nationale, 1870).
[116] J. Servais, *Athenes et Le Laurium. Esquisse historique* (1973). Reference cited in C. Conophagos, *Le Laurium Antique* (Athens: 1980), pp. 61-63. (Greek edition)
[117] J. Bingen, "Thorikos," *Revue Belge de Philologie et d'Histoire*, no. 2 (1964). p. 29
[118] Xenophon, *Xenophon in Seven Volumes* (Cambridge MA, London: Harvard University Press, William Heinemann Ltd, 1984). "[2] Now, we all agree that the mines have been worked for many generations. At any rate, no one even attempts to date the beginning of mining operations. And yet, although digging and the removal of the silver ore have been carried on for so long a time, note how small is the size of the dumps compared with the virgin and silver-laden hills. [3] And it is continually being found that, so far from shrinking, the silver-yielding area extends further and further".
[119] Konophagos K., (1980) "The ancient Laurion" Ekdotiki Hellas, Athens (in Greek but there is also a French edition) Conophagos, *Le Laurium Antique*.

trade and gave detailed historical and technical information. He also suggested that metallurgy was known to the Greeks before the Phoenicians established metallurgical colonies in the Mediterranean in the ninth century BC. He argued that the Minoans and Mycenaeans learned the technique from Egypt or Asia Minor where they travelled and traded. Other places in Greece where there existed ores of gold and silver are Siphnos, which according to Herodotus, was "the richest of all islands"[120] and Thasos, which took its name from the first Phoenician that came and established metallurgy, it has also ores of gold and silver[121]. In this very useful book, Konophagos (who was a Professor of Metallurgy at Athens University and the general manager of the French company that was then exploiting the mines) gave a very detailed map of the galleries in Laurion and the various constructions that were used in antiquity for metallurgy. Among dozens of very impressive shafts and washing areas, he also recorded the remains of three "characteristic towers" of Laurion, without any other references.

A few years earlier, in 1956, J. H. Young[122] published an article describing six towers he visited in South Attica (at the Laurion area) between the years 1938-41. Even though he was not able to undertake any excavations, he gave detailed descriptions and measured sketches (plans) of these towers. He identified the towers as structures belonging to country estates. His argument was mainly based on a fragment attributed to Demosthenes[123] (late fourth century BC). In this text, Demosthenes (?)

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[120] Herodotus, (Histories, III, 57). "When the Lacedaemonians were about to abandon them, the Samians who had brought an army against Polycrates sailed away too, and went to Siphnus; [2] for they were in need of money; and the Siphnians were at this time very prosperous and the richest of the islanders, because of the gold and silver mines on the island. They were so wealthy that the treasure dedicated by them at Delphi, which is as rich as any there, was made from a tenth of their income; and they divided among themselves each year's income. [3] Now when they were putting together the treasure they inquired of the oracle if their present prosperity was likely to last long; whereupon the priestess gave them this answer: [4] "When the prytaneum on Siphnus becomes white
And white-browed the market, then indeed a shrewd man is wanted
Beware a wooden force and a red herald." At this time the market-place and town-hall of Siphnus were adorned with Parian marble." In Herodotus, *Herodotus, with an English translation by A. D. Godley*, trans. A. D. Godley (Cambridge: Harvard University Press, 1920).

[121] Herodotus (Histories, VI, 46). "I myself have seen these mines; by far the most marvellous were those that were found by the Phoenicians who with Thasos colonized this island, which is now called after that Phoenician Thasos. [2] These Phoenician mines are between the place called Aenyra and Coenyra in Thasos, opposite Samothrace, they are in a great hill that has been dug up in the searching. So much for that. The Thasians at the king's command destroyed their walls and brought all their ships to Abdera" in Ibid.

[122] Young, "Studies in South Attica: Country Estates at Sounion."

123 Demosthenes, Speeches 41-50 speech 47, section 56.

describes an incident that occured in a country estate farm house, where two men intruded into the estate and the women servants took refuge in a tower where they lived and worked:

> "They were lunching in the court when these men burst in and found them there, and began to seize the furniture. The rest of the female slaves (they were in a tower room where they live), when they heard the tumult, closed the door leading to the tower, so the men did not get in there; but they carried off the furniture from the rest of the house, although my wife forbade them to touch it"[124]

The fact is that these towers have indeed been used as farm houses at a later period. Yet there are doubts that this was also their original purpose.

Another question that has to be answered is how is it that these towers were built as parts of farm estates in an area which was famous for its mines of silver (the process of smelting would produce toxic lead fumes) and not for its agricultural land?

The Towers of Siphnos

The same year (1956), Young published a small paper on the towers of Siphnos[125] that he had visited in 1938. He summarised what had already been written by others on them and comments on Dragatsis' "ignorance of stratigraphy". From the first descriptions by Ross of five towers in 1837, then Dragatsis added in 1915, 35 towers and 1924 two more (37 total), Young found a number of forty towers which he thought was "an impressive total for such a small island". He also compared this figure with the numbers of towers on other islands: Thasos has some twenty towers, Keos has twenty-seven but he mentions that our knowledge of the towers is not complete. He contradicted the theory that they were used for signalling noting "that these towers formed a communications network using smoke-signals by day and beacon-fires by night is hard to believe, especially when they are sometimes only three to five minutes' walk apart"[126].

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[124] Demosthenes, *Demosthenes with an English translation by A. T. Murray* (Cambridge, MA; London: Harvard University Press; William Heinemann Ltd., 1939).
[125] Young, "Ancient Towers in Siphnos," pp. 51-55.
[126] Ibid.: p. 54.

In 1973, a study on the homestead farms of the Classical and Helenistic period was published[127] and the situation of the Greek countryside of that period was described. It was argued that primitive agricultural techniques do not require permanent buildings in the fields themselves, for agricultural purposes while the residence of the farmers in the city means that no permanent living quarters are needed in the fields[128]. Following the observation made by Finley[129] that the Greek countryside outside villages was uninhabited, based on the comparison of the number of *horoi* (border inscriptions) that give as security land only and those giving land and house, Pericka reached the conclusion that there was an infrequency of substantial buildings on the farms and that there was a trend, beginning in the fifth century and becoming marked in the fourth, towards urban residence, which did not necessarily mean movement away from the land economically. Pericka's opinion was that "homestead farms were not (and according to some could not even be) a common phenomenon in classical Greece, although nobody denies that they did occasionally occur. [...] they existed only in certain conditions as a "function" of the changing technical, social and economic conditions of Greek agriculture"[130].

There is also a presentation of "the remains of several tens of towers" that exist on the south-western tip of the Crimea, the Herculean Peninsula, in what used to be the *chora* of Chersonesos[131].

A quite extensive collection (and it was very inclusive at the time it was published) of the ancient Greek towers was presented by M. Nowicka in *Les maisons a tour dans le monde grec,* which remains the most complete and broad study of these towers[132]. By presenting the entirety of the towers, Nowicka recognised the fact that they form a distinctive and identifiable group of edifices that present typological similarities and remain obscure as far as their original purpose is concerned. The suggestion of their sacra-idyllic

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[127] Pecirka, "Homestead Farms in Classical and Hellenistic Hellas."
[128] Ibid., p. 117. The author is quoting E. Kirsten who makes an important observation in "Der gegenwartige Stand der attischen Denenforschung" in Atti del terzo congresso internazionale di epigrafia grecae latina, Roma, 1959, p.157.
[129] M. I. Finley, *Studies in Land and Credit in Ancient Athens* (New Brunswick: 1952), ch. V.
[130] Pecirka, "Homestead Farms in Classical and Hellenistic Hellas," p. 121.
[131] Ibid., pp.140-141. "[...] chance has preserved for us on an area of more than ten thousand hectares a highly interesting complex of ruins, the most prominent feature of which is the remains of several tens of towers."
[132] Nowicka, *Les maisons a tour dans le monde grec.*

character[133] derives mainly from the way these architectural features are depicted in the Hellenistic and early Roman paintings and more particular in the murals of Boscotrecase[134].

Figure 6. The landscape in the Black room in Boscotrecase

The paintings represent landscapes that include slender, elegant, and especially decorative architectural forms, playfully alluding to contemporary cultural and political concerns. The scenes include towers, either cylindrical or square which have been interpreted as scenes of worship which prompted the remark that "the tower, therefore, cannot be a simple domestic structure such as a storage house for grain and fruit"[135].

The extended research on the character of the towers extends to the Egyptian dedicative votives in the form of towers[136] (Figure 7) that most

[133] Ibid., pp. 25, 26, 141.
[134] These first century BC murals were discovered in a villa near Pompeii that belonged to Julia the daughter of Augustus and have been published in Peter Heinrich von Blanckenhagen and Christine Alexander, *The paintings from Boscotrecase*, *Mitteilungen des Deutschen Archaeologischen Instituts. Roemische Abteilung. Erganzungsheft ; 6* (Heidelberg: F.H. Kerle, 1962).
[135] Ibid., pp. 18-19. The same remark is repeated in Nowicka, *Les maisons a tour dans le monde grec*, p. 26.
[136] Nowicka, *Les maisons a tour dans le monde grec*, p. 63, fig. 19, 20.

probably resemble funerary edifices and can be connected to an inscription found on a tower in Thasos[137].

Figure 7. Egyptian dedicative votives in the form of towers

The possibility that the character of many of the towers, especially the smaller ones could be "sacred (devoted, for example, to chthonian divinities) or sepulchral", seems perfectly possible, according to the author, "although their definition cannot be based exclusively on archaeological data"[138].

To support this approach, a reference is cited from a study in the meaning of the circular buildings in Greece by F. Robert, where it is presumed that the round towers on the Aegean islands could be monuments of a cult while being also used in navigation[139]. Nowicka concludes by stating that the typology of the towers is very particular and has a very ancient origin but the character and the destination of these structures, along with the reasons they were built are quite diverse, while she insists that "the

[137] Baker-Penoyre, "Thasos," pp. 231 ff. Publication of the inscription in IG XII 8 add. 683
[138] Nowicka, *Les maisons a tour dans le monde grec*, p. 37. «Il est parfaitement possible que certaines constructions rondes ou carrées de petites dimensions aient été des édifices sacres (consacrées, par exemple, aux divinités chtoniennes) ou des sépultures, bien que leur définition ne puisse se baser exclusivement sur des données archéologiques.»
[139] Fernand Robert, *Thymele recherches sur la signification et la destination des monuments circulaires dans l'architecture religieuse de la Grece, Bibliotheque des Ecoles francaises d'Athenes et de Rome fasc.147* (Paris: 1939), pp. 201-202.

confrontation of sources seems to reinforce the thesis of the close links between the representations of the towers and other buildings, and reality, especially with regard to the idyllic sacral landscape"[140].

Figure 8. Bucolic landscape in Boscotrecase

As Nowicka predicted, the approach to the interpretation of the towers has followed a very different path among archaeologists in the following years. Most researches have been based on the documentation of the physical remains of the towers. The investigations of their rationale is mainly characterised by the categorisation of the towers according to where they are located in topographical or geographical terms.

A survey of six isolated rectangular towers and the ambiguous remains of another four or five in north-west Keos is the work of J.F. Cherry, J.L. Davis and E. Mantzourani[141]. They gave a detailed account of the remaining foundations and findings (mainly lekanai and amphorae), dating from Archaic, Classical and Hellenistic times, which is the similar with the dating of the towers elsewhere in Greece. Their suggestion is that they are

[140] Nowicka, *Les maisons a tour dans le monde grec*, pp. 140-141. «La confrontation de sources semble renforcer la thèse des liens étroits entre les représentations des tours et d'autres bâtiments, et la réalité, surtout en ce qui concerne le paysage sacral idyllique.»
[141] J.F. Cherry, J.L. Davis, and E. Mantzourani, "The Towers of Northwest Keos," in *Landscape Archaeology as Long-Term History. Northern Keos in the Cycladic Islands from earliest settlement until modern times.*, ed. E. Mantzourani, *Monumenta Archaeologia* (Los Angeles: UCLA Institute of Archaeology, 1991), pp. 285-298.

not a functionally uniform phenomenon and the towers were not all built for a single purpose so there is not a general explanation for their existence. The necessity of defending the multiplicity of functions by the authors derives from the observable fact that the towers have a similar typology which suggests similar purposes for their construction.

As less probable uses, the authors suggest: 1.Protection of mines and mineral wealth; 2. Lighthouses (none is very close to the shore); 3. Coastal watchtowers (only one has good views of the sea and coast). Keos towers are markedly less coastal than those on other islands; 4. Beacon towers, part of an organized system of signalling are not easy to evaluate, but those identified do not have a good sight to the fortified cities of Koressos and Ioulis, and were built not far apart from each other so it seems very unlikely that they were constructed at a single time for a collective use as an organized signalling system; 5. Border defences, (not clear where the borders of the Keian states were) some are sited in strategic positions but far from borders, and also the dates of construction don not agree with the political map.

According to the authors, none of the above purposes can be excluded entirely in individual cases, but none of them account very well for all of them. In summary, the most generally accepted interpretations by the above authors are:

a) Association with agriculture, the towers formed parts of country estates, providing refuge for farmers. But they mention that the towers are not always associated with farming land, findings neither confirm nor deny this, and many questions arise about the necessity of the presence of costly and conspicuous strong houses. Other questions that have not been answered are about their frequency in specific periods and their presence on certain islands.

b) refuge from piracy, (many towers have decidedly inland settings but maybe as a retreat from the coast they offer the best security response to piracy, the rash of tower building does not seem to correspond chronologically with the times of greatest piracy). Their architecture far exceeds the strictly functional requirements of a structure designed for defence (of any kind).

Conclusion of the authors is that the evidence reveals considerable prosperity in an essentially urbanized population. Maybe a form of competitive emulation among the wealthy, dictated as much by fashion as by function. Political divisions may have exacerbated such processes. The building of conspicuous and exceptionally secure rural strong-houses speaks of a persistent state of insecurity, whether from within or beyond the confines of the poleis[142].

In 1993, L. Mendoni[143] announced that after an extensive survey, 77 towers had been identified in Keos where before only 27 were known[144], suggesting that almost certainly, the original number must have been even greater. Their chronology is the same with the other corresponding monuments (towers) of the other Cyclades, late sixth century to early third century BC, but the question remains in respect of their original function. The methodology introduced by Mendoni is that each tower has to be examined separately from the others and they should not be interpreted as an entity. According to Mendoni, in some cases they seem to be public buildings connected with the fortifications of the cities, not a few are directly related to farm production, closely connected to cultivated areas; but for most, the attribution of a single use does not reflect reality. The places chosen have good visibility and there are a few towers from which less than two other towers are visible. Maybe they were following the boundaries of the areas of cities. Their density on the island is 1.3 square kilometres per tower.

An interesting remark[145] is also made by Mendoni about their function as landmarks, reference points that are not indicating boundaries or strongholds but they define a certain area and make it recognisable from afar. Mendoni compares their presence with the significance and semantic meaning of the small churches that are scattered everywhere in the Greek landscape and especially on the Cycladic islands.

The results of a diachronic surface survey and of four late Classical-Hellenistic towers investigated in the north-western part of Andros were published by Anthi Koutsoukou[146] and Chrysanthos Kanelopoulos in 1990: 1. Tsouka, a small round tower, 6.20m external diameter, absence of roof tiles

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[142] Ibid., pp. 292-294.
[143] Mendoni, "Pyrgoi tes Keas," pp. 275- 286.
[144] G. Welter, "Von Griechischen Inseln: Keos I," *AA* (1954): pp. 48-93.
[145] Mendoni, "Pyrgoi tes Keas," p. 285.
[146] Koutsoukou and Kanellopoulos, "Towers from Northwest Andros," pp. 155-174.

indicates a flat roof, no other structures, marble from nearby source, pottery from fourth century BC, large number of pithoi shows storage, hilltop location, probably a part of farm complex (?) 2. Agia Marina, a small round tower on a high point with restricted view, 4.80m external diameter, second external wall (addition?), irregular schist, pottery from fifth to fourth century BC. There are no settlements or other towers associated with the tower of Agia Marina, which maybe was guarding the pass and/or being a station. There is also no decisive evidence of agricultural activities. 3. Hellenikon-Choreza on a small plateau, square plan 6m each side, severely destroyed (clandestine activities recently), monumental masonry of trapezoidal isodomic building technique with bosses, white-grey marble (local?), south entrance, estimated height 12-15m, absence of tiles probably indicates flat roof, sixty large blocks scattered around, pottery is scarce dating from late Classical to Roman periods. It is considered to be a building requiring a considerable amount of labour and expense, maybe part of a public programme. It seems not to be individual work since there is limited potential for agricultural activities but there are mines of argentiferous lead and silver close by. The architectural evidence, according to the authors, suggests military work, perhaps from the fourth century BC although its location is not ideal. Comparison with the military towers of Argolid, Delphi and N. Megarid and related to the rule of Antigonus in the Cyclades and the defensive system of Andros. 4. Tokeli, a square tower on the summit of a narrow ridge 600m inland, 7.87m x 8.20m, local schist in rough quadrangular long blocks, traces of a rubble wall that maybe formed a courtyard, pottery rather scarce perhaps fourth century BC as well. Main feature of this tower, its location, with a clear view to the whole strait of Kaphireus, an area without agricultural value so it was probably part of the defensive system of Andros, since it has visual contact with Euboea and consequently, with the mainland. The authors assume it was a watchtower that communicated with some other tower on the other side in Euboea which they hoped would be located. There is a reference to Diodorus and a comment on the control of the grain-carrying ships, hesitantly associated with the tower of Choreza and maybe Tokeli.

Towers on the island of Thasos are discussed to determine how they were related to the Thracian countryside, in the very interesting article of

Robin Osborne[147] (1986). He argues that it is unlikely there is any single explanation for their existence. Defence does not appear to be their prime purpose. Some may have served as signals of danger to sailors; others were primarily agricultural, providing safe, if temporary, bases for farming and herding. Some may have been strong rooms associated with normal village dwellings for storage and the protection of goods as well as people in times of danger or as a display of wealth. It is noted that village settlements are infrequent on Thasos. A catalogue of 24 square and seven round towers making a total of 31 is given in an appendix.

Concern is focused on:1) *the size of the towers*: round towers external diameter varies from 3.5m to 10m, square from 7.5m x 7.5m to 10m x 10m; 2) *the presence or absence of courts:* two towers from SW clearly have courts, elsewhere is not so straightforward; 3) *Towers and the sea:* five towers are on the coastline or very close to the shore and could be markers for ships, another seven are close but could not have been of any use to sailors, a third group of five towers is located far from the coast but overlooking large parts of the inland and have a view to the sea; 4) *Towers and the countryside and its resources*: two towers close to quarries, three with no connection to agricultural land, others with access to "good if limited agricultural land" mainly olive groves, but this relationship varies a good deal; 5) *Towers and settlement:* Osborne believes that information about the relation to other evidence of human presence in the landscape is deficient. From his observations, most seem to have been isolated; few were part of larger settlements.

On their original purposes, he suggests that "Towers built for a single purpose might be expected to have a more or less uniform situation. [...] The variety of type and situation which the above description has revealed for the Thracian towers does not encourage the belief that their existence can be accounted for by any single explanation"[148].

Nevertheless he does not believe that "tower" is a totally false category. "What unites these structures is their monumentality and there can be no doubt that the building even of the gneiss towers of the NW of the island was an expensive undertaking. [...] Any individual or group of

[147] Osborne, "Island Towers: the Case of Thasos," pp. 167-178.
[148] Ibid.: p. 173.

individuals, who built a tower, for whatever purpose, was making a display. [..] Tower building [...] is important for revealing something very basic about the nature of society and the tensions within it."

In his conclusion he suggests that the prosperous citizens have put their wealth on display by building towers and that the habit of building towers must be seen as a "product of fashion and emulation". He also adds that it is much more the structures of Greek history which the towers illustrate than any specific conjecture.

The discussion about the "large number of substantial structures known as single towers" that exist, particularly in the Aegean islands and the question about their original purpose(s), is approached and presented by the same author in a publication illuminating the Classical landscape and the relation between countryside and city in Classical Greece[149]. The diversity of the scale and type of the towers on the Aegean islands are examined, presupposing and underpinning their recognition as a common phenomenon. They are presented accumutavely as "very strongly built structures, about 10m x 10m square or of slightly less than 10m diameter. Today many survive only to a little above foundation height but [...] could have four storeys and reach more than 20m in height". The author notices that "the monumentality of many tower foundations suggests that we are dealing with something more than casual constructions hastily thrown together by an individual" and argues that the towers are "monuments which are certainly not always at all closely connected with the agricultural pursuits of resident farmers"[150]. The variety of the location of the towers and their connection or not with other settlements and structures is examined and the multiplicity of the suggested purposes is tested against logical assumptions concerning compatibility of the proposed functions with the quality of the structure, the location and the historical and social circumstances.

It should probably be stated here, in reference to the suggestion, which some authors have made, that the towers could have been lighthouses, that it is very unlikely since most of these buildings are far inland. The ones placed closer to the sea are not close enough to serve as

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[149] Robin Osborne, *Classical Landscape with Figures, The Ancient Greek City and its Countryside* (London: George Philip, 1987), pp. 63-67.
[150] Ibid., p. 67.

lighthouses. In addition the ancients did not have any reason to travel in-between these small islands during the night. Lighthouses are much later structures, beginning mainly from the Hellenistic period (third to first centuries BC).

Other suggestions have been that the towers served as refuges from pirates. This is quite a peculiar suggestion, since most of these islands like Thasos and Amorgos were actually places where the pirates themselves had settled[151]. Apart from that, research by Ormerod has shown that it was the traders, the ship owners that would also act as pirates, according to the circumstances. This was still the case until the nineteenth century, as vividly described by many European travellers of that time.

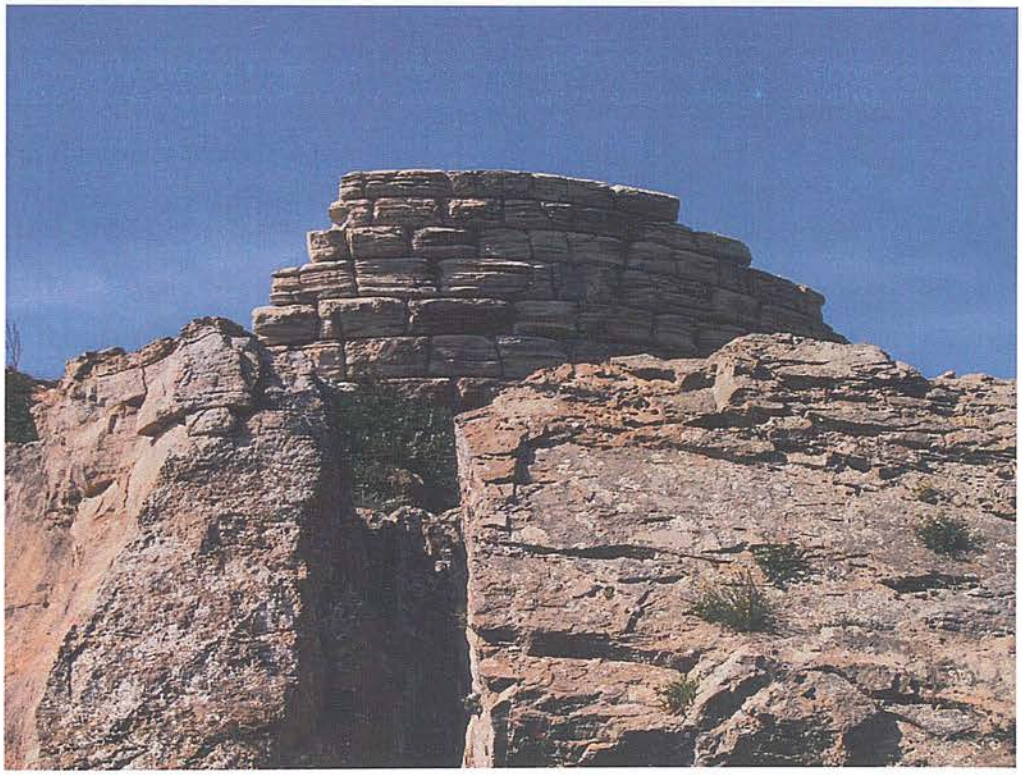

Figure 9. White tower (Aspros Pyrgos) in Siphnos

In 1991, N. Ashton[152] published his extensive survey of the towers of Siphnos. He gives plans and photographs of each of them and he raises the number to fifty-seven. He reports that the most ancient towers were adjacent to and protecting the mine operations. Most of the towers were built after the

[151] H.A. Ormerod, *Piracy in the Ancient World. An essay in Mediterranean History*, 1969 ed. (Liverpool: Liverpool University Press, 1969), pp. 64-79, 116.
[152] Ashton, *Siphnos. Ancient Towers B.C.*

peak of the mining exploitation. Their use has most probably been "watchtowers to signal to and protect the inhabitants".

Figure 10. The tower "Kade" in Siphnos

The perspective that the Siphnos towers have been part of estate houses has been taken by other scholars recently, like Davies[153] in his doctoral thesis (Oxford 1998). He connects the existence of the towers to his proposed socio-economic theory about a decentralised economy. He suggests that the towers served as trading centres for local agricultural products. However, that would also presuppose fertile and rich agricultural land, which is non-existent on these islands. The cost of erecting these buildings - which he fails to calculate - would not have been afforded by a single land owner and it is known from ancient sources that no man had more than four acres. In many cases individual land ownership was of a number of small plots, scattered around the whole area – never, however, of more than two acres.

In an attempt to explain how they were built, Davies suggests they were a product of a collective effort by farmers gathering together to build a tower but he cannot identify what kind of bonds would have brought these people together. Collective work was and still is a common practice in

[153] Davies, "Economic Geography of the Ancient Greek Countryside: A re-examination of monumental rural sites on the island of Siphnos".

Greece, and in most cases it is associated with sacred buildings like temples or churches.

A more recent (2000) article on Siphnos towers by Birkett-Smith[154] connects them with the gold and silver mines. It is suggested that the towers provided "an effective screen to stand guard over the vulnerable fuel resources" for the smelting process, namely, the woods. The problem with this suggestion is that it is very unlikely and cannot be proved that the woods would be so extensive and it is known from the small amount of the scoriae (the side-products from smelting the ores) observed on the island[155] that the ore was transferred to Attica (at least, at the time when the towers were built) for further processing[156].

The towers of Siphnos have been surveyed recently by a scientific team under the coordination of the archaeologist Z. Papadopoulou. The results of their research bring the number of the towers to seventy-six (76)[157]. This means that their density on the island exceeds that of any other area in Greece since it is more that one tower per square km. The research has raised more questions than giving answers and the need for a re-examination of the distribution of the population and the social stratums has been emphasised[158].

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[154] J. Birkett-Smith, "On the Towers and Mines of Siphnos," in *Proceedings of the 1st International Sifnean Symposium*, ed. Tz. Zerboudakis (Athens: Society for Sifnean Studies, 2000), pp. 279-294.

[155] The results of the extended investigations performed in Siphnos by a number of german and greek specialists have been published in M. Vavelidis et al., "Geolologie und Erzvorkommen," *Der Anschnitt*, no. 3 (1985): p. 229.

[156] The transportation of ores with ships in antiquity is attested by Strabo (V, 2. 6) and confirmed by archaeological finds, in Evagelos Kakavoyiannis and Olga Kakavoyianni, "The Diachronic Relations of Siphnos with Laurion," in *Proceedings of the 1st International Sifnean Symposium Siphnos 25-28 June 1998*, ed. Tz. Zervoudakis (Athens: Society for Sifnean Studies, 2000).

[157] Z. Papadopoulou, "Thirteen unknown ancient towers in Siphnos," in *Proceedings of the 2nd International Sifnean Symposium Siphnos 27-30 June 2002*, ed. Tz. Zervoudakis (Society for Sifnean Studies, 2005), p. 103, n. 1.

[158] Ibid., pp. 110-112. Aproximately to the same conclusion arrives the research in Davies, "Economic Geography of the Ancient Greek Countryside: A re-examination of monumental rural sites on the island of Siphnos".

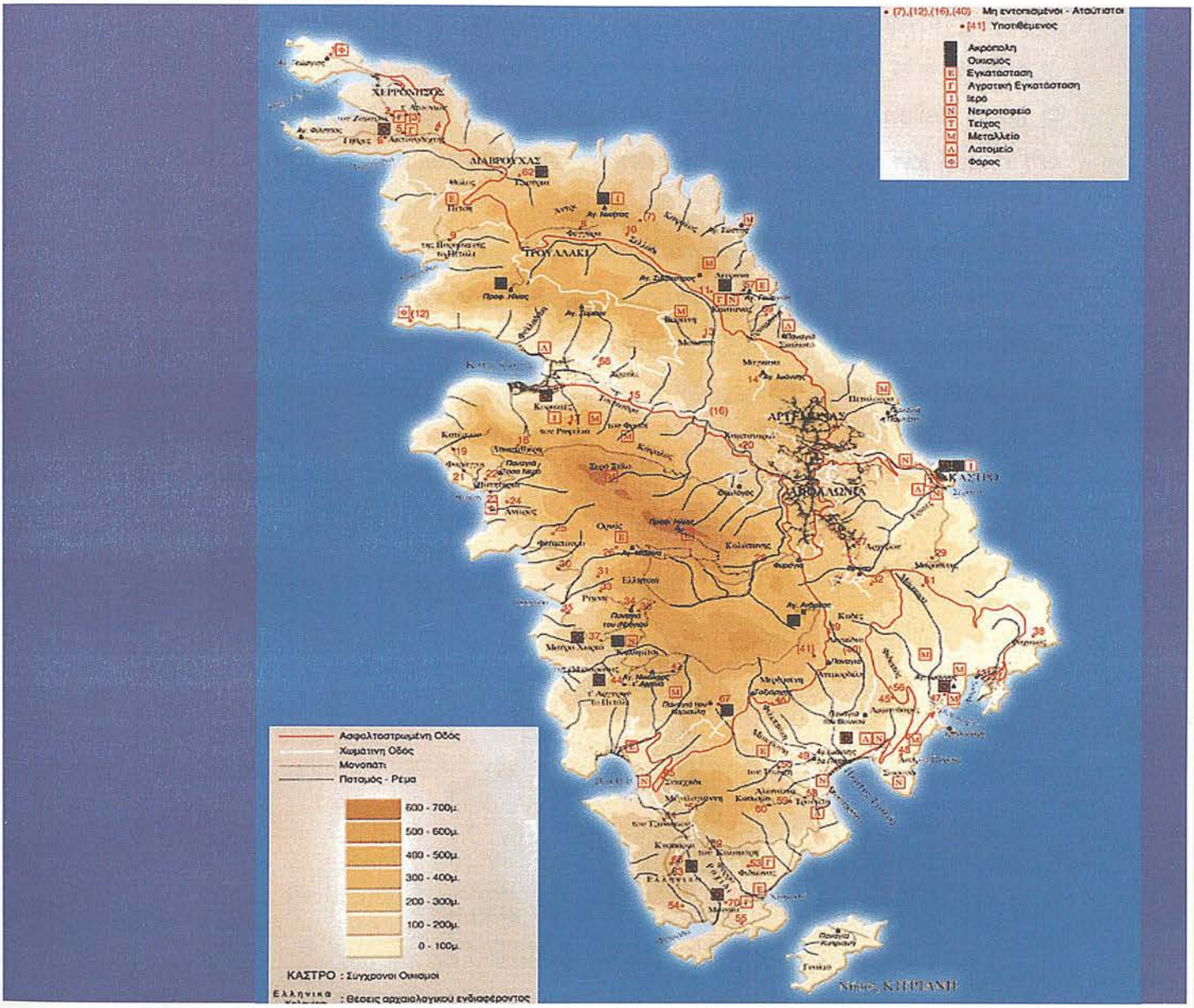


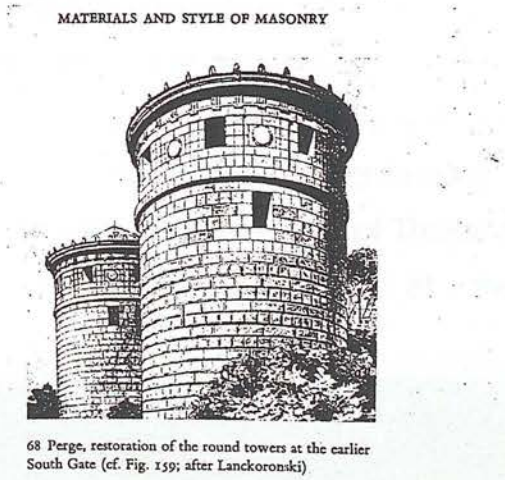
Figure 11. Map of Siphnos with the location of the towers (2002)

Origin of Typology

It is evident that there were more than a hundred towers built between the sixth and the third centuries BC on certain islands (Thasos, Siphnos, Amorgos, Kea, Naxos, Seriphos, Kythnos, etc) and in certain areas on the main land (Attica, Euboiea, etc). They are not connected with any kind of fortifications or city walls and they can be described as the "self standing isolated towers" or single towers.

The origin of their typology, it is suggested by A. Lawrence[159] and F. Winter, has been the Assyrian self-standing tower as depicted in a relief from 1200 BC. Their typology was adapted by the Ionian and Aeolian cities in Anatolia and then transferred to the Aegean islands, although not before the fifth century BC[160].

The above suggestion might be considered for the square towers (Lawrence and Winter do not mention the round ones) but the question of the typology of the isolated round towers remains. The only known counterparts from Anatolia are the famous gate towers of Pergamon[161] which are attached to the city walls.



68 Perge, restoration of the round towers at the earlier South Gate (cf. Fig. 159; after Lanckoronski)

Figure 12. The round towers at Pergamon walls (from Winter)

Other circular buildings that have been recorded in the Greek territory from the same period are the Tholos of Delphi, the Tholos or Thymele at Epidauros and the Philipaion at Olympia.

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[159] Lawrence, *Greek Aims in Fortification.*

[160] Winter, *Greek Fortifications*, p. 167. "The natural place to mount defensive artillery was in the towers; in Hellenistic systems this was their most important function. Eventually Hellenistic towers such as those at Isaura evolved into something very much like the pillboxes of the 2d World War, which might be used singly, as were the ancient towers also (at Side existence of 7-8m. gaps in the parodos behind the towers. These gaps were bridged with wooden planks, removal of which would have left the towers as strong points isolated from their surroundings [...] Indeed in Maier, ed., *Griechische Mauerbauinschriften* pp. 250 ff. It is noted that in rough Cilicia "tower-forts" substituted for city circuits down to Roman times.) In such systems most of the available fire-power is concentrated in numerous isolated but very heavily protected redoubts. [...] With the advent of siege artillery they the key to the whole system (from late 5thc) far outweighing the curtains in importance. Philo therefore specifically warns against bonding towers and curtains together, lest the collapse of the curtain endanger the security of the tower."

[161] Winter, *Greek Fortifications*, p. 88.

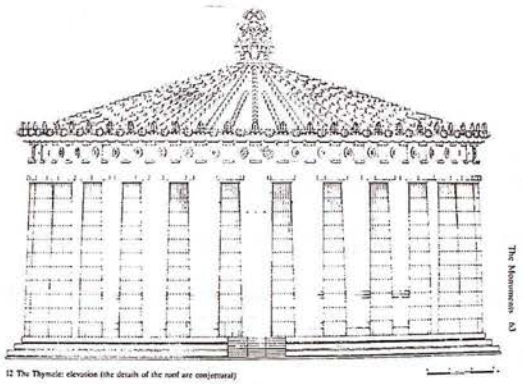

Figure 13. Reconstruction drawing of the Thymele

The function of these buildings has not been identified but it is suggested that in Delphi and Epidauros they were connected with the Gaia or the female goddess that preceded Apollo[162]. An indication of the rituals that have probably taken place there is given by their architectural remains. There is a construction of a labyrinth under the pavement of Tholos at Epidauros and an opening connecting to the ground level at the centre of the pavement.

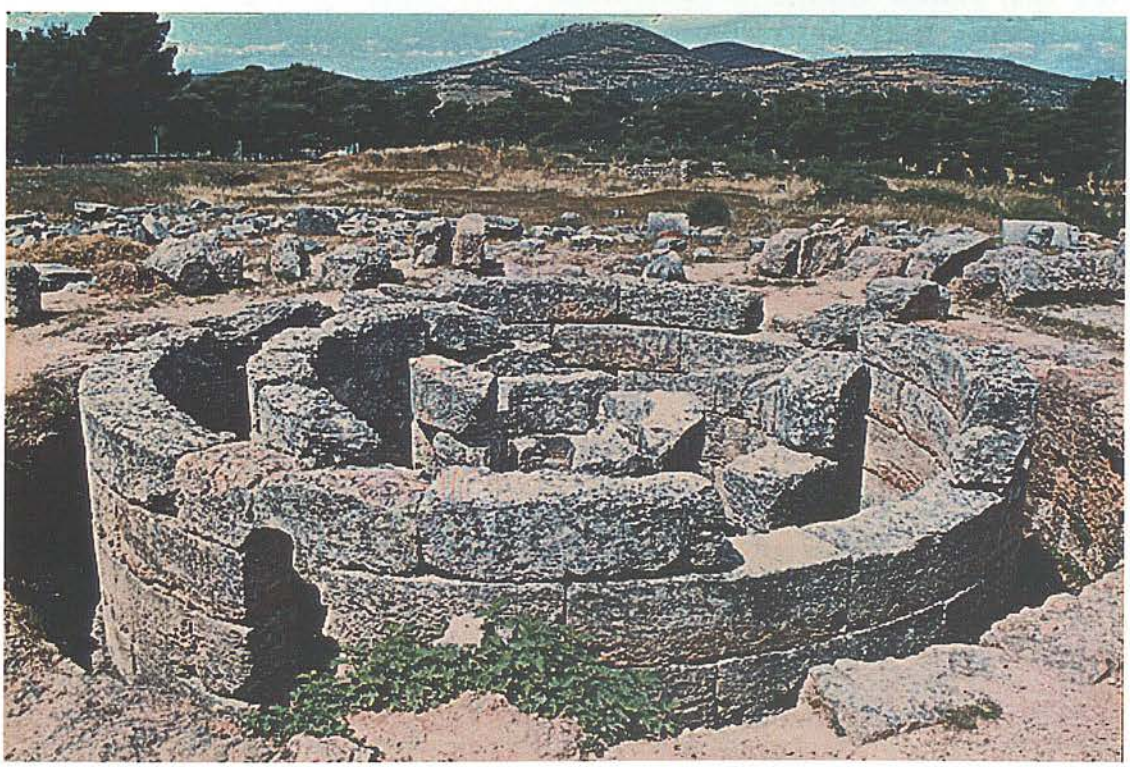

Figure 14. Tholos foundations in Epidauros forming a subterranean Labyrinth

[162] Robert, *Thymele recherches sur la signification et la destination des monuments circulaires dans l'architecture religieuse de la Grece.*

Conclusions

None of the theories above have addressed successfully the question about the original purposes of, and the intentions for the construction of the numerous towers in various areas and in particular, in Siphnos.

The towers in Siphnos present the same typology in their architectural features and way of construction. The fact that they are built in very different topographical spots does not affect the similarities in their typology which is quite consistent. The proposed interpretation should address the question of the diversity of their location and identify the common ground on which this has been based.

Another important fact is the immense cost of these structures. According to the estimates of the most experienced Greek architect on ancient construction, the head of the restoration project of the Acropolis, Athens, Professor M. Korres, the cost of each tower could be 30,000 to 40,000 drachmas at the time they were built, which, when converted in current currency would be around two million euros (1.3 million pounds)[163]. This amount of money could have been halved for smaller towers (like the ones in Siphnos) and when voluntary work was involved but still the cost would have been prohibitive for a single farmer or individual developer. The high density of the towers on the island of Siphnos presupposes a very prosperous population. An economy based on agriculture could never have provided so much wealth. The connection with the mining production and the people involved appears to be the only plausible explanation.

Trying to understand these buildings from the architectural point of view, it is essential to trace the social, economic and religious circumstances of the period in which they were constructed, but also the principles of architecture, especially those of that time and particular place.

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[163] According to the estimation six months would be required for the completion of each tower and its cost includes wages for quarrymen and masons (12000 workman days) carpenters (2000 days) non-specialists (6000 days) and supplies of wood, ropes and iron. The construction would have been executed with the assistance of cranes (dicolos) and polyspasts. The detailed calculations and construction method are presented in detail in a paper that Professor M. Korres has written about the tower of Agia Triada in Amorgos (another Cycladic island) and is going to be published soon. I am grateful to M. Korres for handing in to me a copy of the unpublished article and giving the permission to use his conclusions. Korres, "The tower of Agia Triada in Amorgos," pp. 20-22.

It was indicated in Homer and further developed in Anaximander that the order (ρυθμός) of the heavens, the cosmos, was not only a paradigm for every artefact in this world but that the order of the heavens was simultaneously made to appear and be discovered through making. The coherent cosmic model of Anaximander, which he was aware could take innumerable forms became in Plato the paradigm for a demiurge whose creation of the cosmos was no longer a question of making a world appear but a matter of representing one through the duplication of an immutable pattern[164].

In the author's understanding, these principles can allow architecture to create (make appear) and discover a new cosmos by reshaping the environment in which people lived and by creating a place which could enhance the way of living. At the time the towers were built, every architectural innovation would have been associated with the cosmological concepts and the divine model of creation and there would have been a sacred side to it as there was considered to be in all everyday aspects.

The towers were serving definitely also practical purposes, probably in connection with the mining workings but in order to identify them more precisely, the social, political, economic and religious context should be examined, along with the concepts and practices of mining.

[164] McEwen, *Socrates' ancestor: an essay on architectural beginnings*, pp. 43-46.

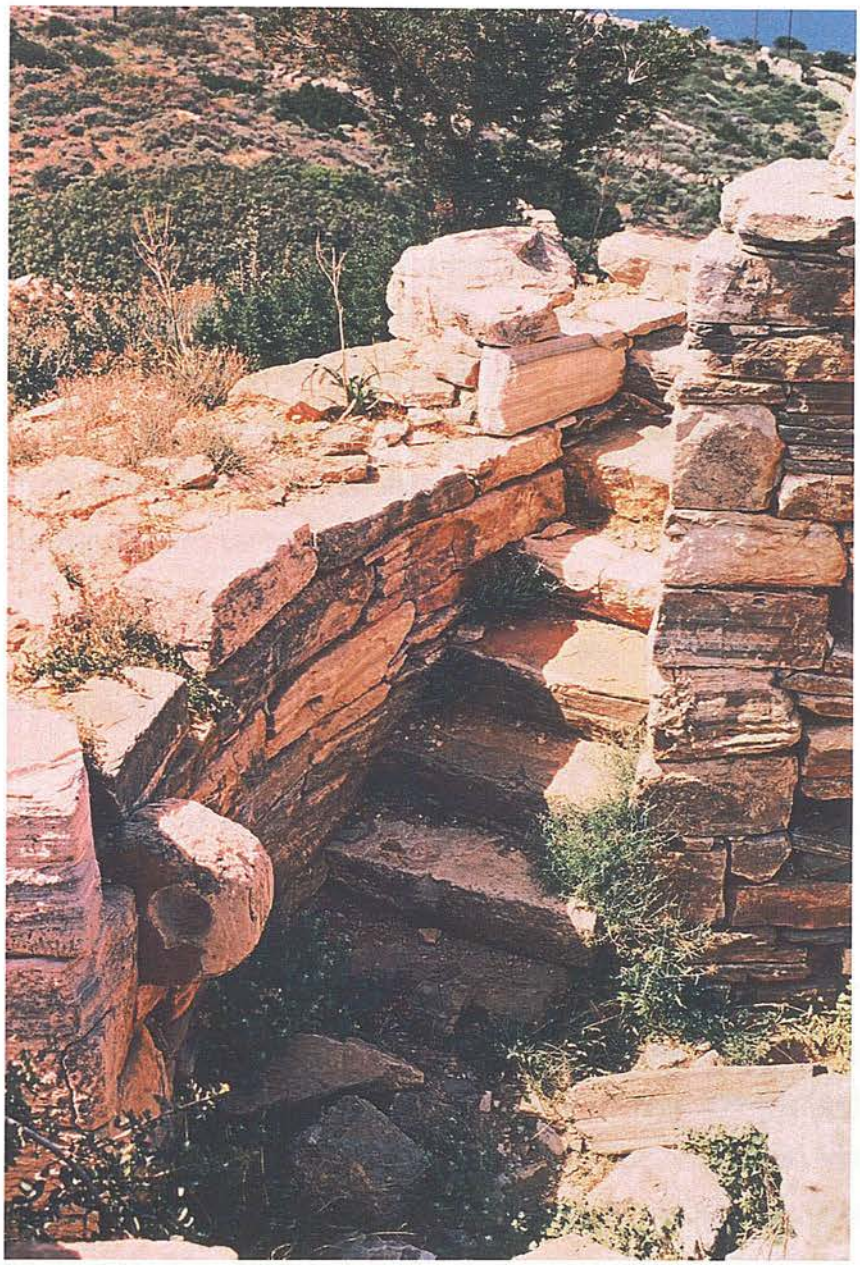

Figure 15. The corbelled marble staircase in Aspros Pyrgos, Siphnos

CHAPTER 3
The cultural context of the Siphnos towers

One of the most difficult tasks for the architect concerned with conservation is to identify of the original purpose of the surviving architectural remains of the distant past. This in most cases is based on:

1) the information that can be gleaned from the remains, from which a graphic reconstruction of the building itself (architectural drawings) can be reproduced and,

2) historical information concerning the building.

There are cases where both of the above approaches have produced insufficient information to provide an understanding of the monuments. A prominent example is the case of the hundreds of self-standing towers that exist in the Hellenic region, dating from about the sixth century BC to the fourth century BC.

The present research aims to identify these towers by reconstructing the cultural context of the society that generated them. The immense difficulties and complexities of any attempt to access the ancient world and reconstruct ancient realities and perceptions, requires the strictest methodological rigour. In order to achieve this rigour, as many sets of analyses as possible, separate from each other should be made. The above methodology of separate subjects is conducive to the effort, both to prevent cross contamination and to make possible cross-checks, and hopefully, to note convergences in the conclusions, among them. The separate fields of analysis should ensure that the assumptions are explicit and that the resulting argument does not contain hidden circularity about different points about the same culturally determined assumptions mirroring the reader's preconceptions.

The aim in the following chapter is to analyse the natural and cultural context of Siphnos, with an emphasis on the period when the towers were built (seventh to fourth centuries BC). This analysis will present the hypothesis with further arguments and will try to identify any controversial or obscure issues that might challenge the suggested theory. The aim is to

underline the significance of metals to the development of civilisation in the Aegean and the consequences that this had for the island of Siphnos.

General geographical historical and cultural context

Geography

The island of Siphnos belongs to the Cyclades, a cluster of islands in the centre of the Aegean Sea. They were so-named from antiquity, probably because they lay in a circle (kyklos) around the small island of Delos, a small island that was considered sacred as it was, according to the legend, the birthplace of the god of light, Apollo.

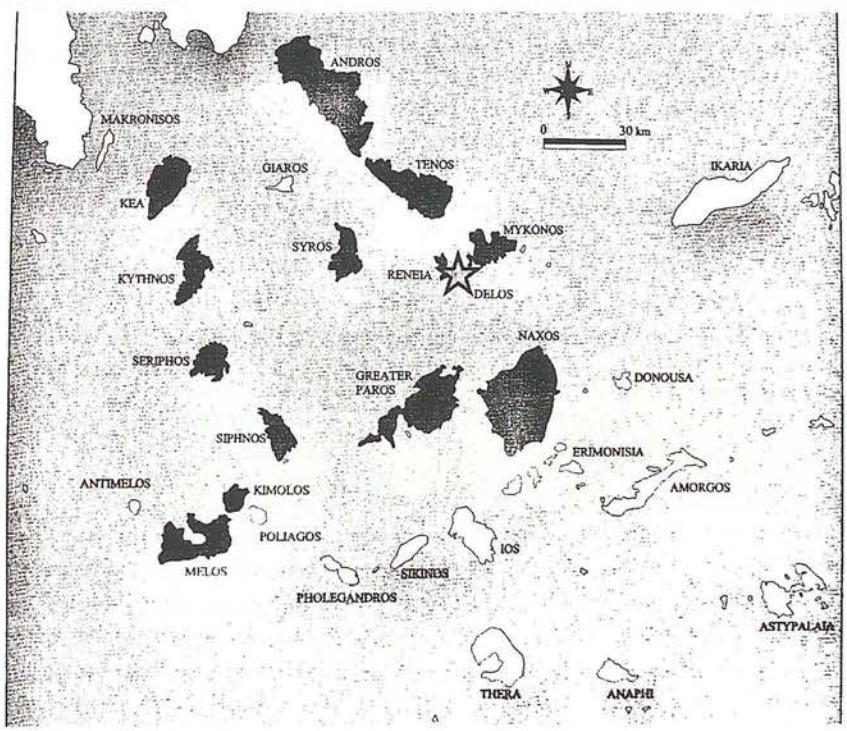

Figure 16. The Cyclades as a Kyklos around Delos (Broodbank p. 69, fig. 12)

In the third century BC, Callimachus[165] in his *Hymn to Delos* gives a very poetic description of the islands, describing them as circumscribing as a choir around Delos (ως χορόν αμφεβάλοντο). This metaphor serves also as an introduction to the nocturnal festivities of Delos that included the circular choir dance of geranos or the labyrinth[166]. In the beginning of the same Hymn, Callimachus refers to the islands as ιερώταται, meaning the most sacred. The use of this epithet is not considered to be purely ornamental and it could indicate the sacredness shared with Delos[167]. The term is used without any reference to particular islands until Pliny the Elder in the first century AD gives us (apart from the reason for their name) an account of their number and their names[168]. Siphnos is mentioned, with information about its size and its previous names as Meropia and Acis.

The islands are, in fact, the peaks of submerged mountain ridges, standing on a relatively shallow submarine platform, which is separated by deeper channels from the islands to the east (Ikaria Samos) and south (The Dodecanese, Crete) forming thus a distinct group from the rest of the Aegean

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[165] Callimachus, Hymn to Delos, 4. 300-315
Αστερίη θυόεσσα σε μεν περί τ'αμφί τε νήσοι
κύκλον εποιήσαντο και ώς χορόν αμφεβάλοντο
ούτε σιωπηλήν ούτ' άψοφον ούλος εθείρας
Έσπερος, άλλ' αιεί σε καταβλέπει αμφιβόητον
οι μέν υπαείδουσι νόμον Λυκιοίο γέροντος
όν τοι από Ξάνθοιο θεοπρόπος ήγαγεν Ωλήν
αί δε ποδί πλήσσουσι χορίτιδες ασφαλές ούδας
δή τότε και στεφάνοισι βαρύνεται ίρον άγαλμα
Κυπρίδος αρχαίης αριήκοον, ήν ποτε Θησεύς
είσα το σύν παίδεσσιν, ότε Κρήτηθεν ανέπλει
οί χαλεπόν μύκημα και άγριον υία φυγόντες
Πασιφάης και γναμπτόν έδος σκολιού λαβυρίνθου
πότνια σον περί βωμόν εγειρομένου κιθαρισμού
κύκλιον ωρχήσαντο, χορού δ' ηγησάτο Θησεύς
ένθεν αειζώοντα θεωρίδος ιερά Φοίβωι
Κεκροπίδαι πέμπουσι, τοπήια νηός εκείνης.

[166] W. H. Mineur, *Callimachus, "Hymn to Delos" introduction and commentary by W.H. Mineur*, vol. Suplementum 83, *Mnemosyne, Bibliotheca Classica Batava* (Leiden: E. J. Brill, 1984), pp. 235-236.

[167] Ibid., p. 53.

[168] Plinius, *Naturalis Historia,* b.iv.22, translation from John Bostock *The Natural History. Pliny the Elder* (London: Taylor and Francis, 1855), (... are the Cyclades, lying in a circle around Delos, from which circumstance they derive their name. The first of them is the one called Andros with a city of the same name, distant from Geraestus ten miles, and from Ceos thirty-nine. Myrsilus tells us that this island was at first called Cauros, and after that Antandros; Callimachus calls it Lasia, and others again Nonagria, Hydrussa, and Epagris. It is ninety-three miles in circumference. At a distance of one mile from Andros and of fifteen from Delos, is Tenos , with a city of the same name; this island is fifteen miles in length. Aristotle says that it was formerly called Hydrussa, from the abundance of water found here, while some writers call it Ophiussa. The other islands are, Myconos, with the mountain of Dimastus, distant from Delos fifteen miles; Siphnus, formerly called Meropia and Acis, twenty-eight miles in circumference...)

islands[169]. At the same time, they were important because they served as stepping stones to the lands on either side of the Aegean and as a link to the southern part of the Aegean and Crete.

There exist more than 200 islands and two chains of islands can be distinguished: to the west are Keos, Kythnos, Seriphos, Siphnos, Kimolos, Melos and Pholegandros, which actually form a continuation of the mountains of Attica and to the east, are Tenos, Mykonos, Delos, Syros, Paros, Naxos, Ios, Amorgos, Santorini (Thera), and Anaphe. Within the Aegean, their size is typical of all but a handful of islands, ranging from Naxos (430 sq km) and Andros (380 sq km), down to minute uninhabited rocks, making them the most numerous and complicated cluster in the Aegean. They are the most distant Aegean islands from the mainland shore and their location – both on the edge of everywhere and at the centre of the whole – accounts for much of their history.

Siphnos lies to the west of Cyclades and is 150 km from the eastern coast of Peloponnesus. The surface area of Siphnos comprises 73 sq. km, plus the island of Kitriani which is 0.5 sq. km, placing the island among the medium sized in the Cyclades. The width from east to west measures about 11 km and the north to south, the length is approximately 16 km.

The topography of Siphnos, like most of the Cycladic islands, is mountainous and arid with very few flat areas appropriate for agriculture. The island is dominated by the parallel ridges of Prophitis Helias (678m), Agios Simeon (476m) and Agios Nikitas (428m), running north-west to south-east and the Livadas and Khoni valleys between. South of the Prophitis Helias ridge, an upland area of rounded hills descends to enclose the bays of Vathi and Platis Yialos and terminates in the low-lying area of Kondou with the island of Kitriani beyond. The south-eastern sector of the island is a dissected plateau rising to about 220m[170].

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[169] R. L. N. Barber, *The Cyclades in the Bronze Age* (London: Duckworth, 1987), p. 1.
[170] Geographical information gathered mainly from Davies, "Economic Geography of the Ancient Greek Countryside: A re-examination of monumental rural sites on the island of Siphnos". Also in Cyprian Broodbank, *An Island Archaeology of the Early Cyclades* (Cambridge: Cambridge University Press, 2000).

Figure 17. Map of Siphnos

The steep rugged slopes have been terraced to permit the cultivation of land due to the lack of arable land. Apart from the crucial role of this feature in the island's agriculture, these terraces have been made by human labour from Early Bronze Age[171], and form the most characteristic feature of the Cycladic landscape.

The overall outlines of the Cycladic islandscapes have altered little in the last seven millennia[172]. The Cyclades had reached their present physical form by the later Neolithic Age.

Geology

The geotectonic map of the Hellenides[173], which are part of the Alpine orogenic belt, illustrates that in the Aegean islands (like Macedonia and

[171] C. A. I. French and T. M. Whitelaw, "Soil erosion, agricultural terracing and site formation processes at Markiani, Amorgos, Greece," *Geoarchaeology*, no. 14 (1999).
[172] Broodbank, *An Island Archaeology of the Early Cyclades*, p. 70.

Thrace) metamorphic rocks, the granitoid intrusions and the vulcanoplutonic complexes predominate. These rocks host the most polymetallic mineralizations known as mixed sulphide ores, consisting mainly of Pyrite-Blende-Galena[174].

Even though the surface soil is quite poor, the mineral wealth underground seems to have been substantial. A "crucial dimension of physical variability"[175] concerns the lithic and metallic resources known to have been exploited by Neolithic and Early Bronze Age people.

According to recent geological investigation, the epithermal type of mineralization, related to geothermal activity, is exhibited in the outcrops of the Western Cyclades (including Siphnos), "a number of common mineralogical and geochemical features, which allow their characterization as potential sources of gold, silver, lead, copper, arsenic and tin in antiquity."[176]

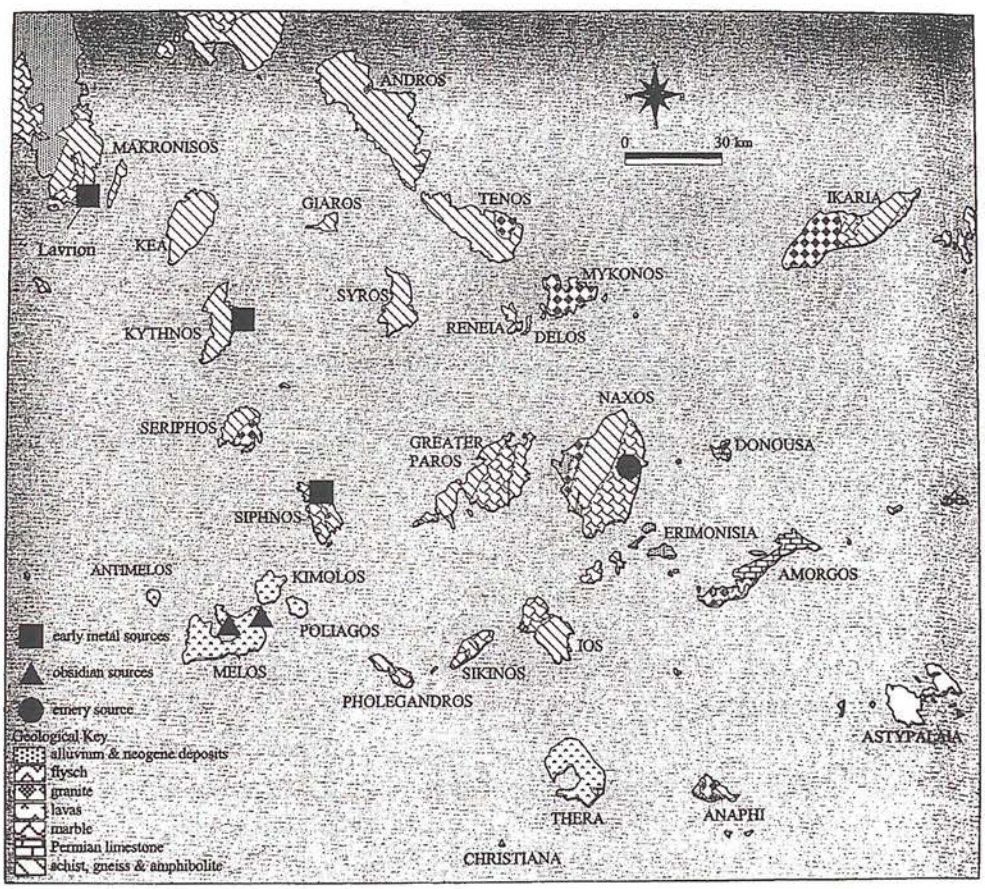

Figure 18. Cycladic geology and mineral resources. (Broodbank, p. 80 fig. 19)

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[173] D. Papanikolaou, *I geologia tis Ellados* (Athens: Eptalophos Puplications, 1985), p. 88.
[174] N. Skarpelis, K. Kyriakopoulos, and I. Villa, "Occurrence and Ar / Ar dating of a granite in Thera (Santorini, Greece)," *Geologishe Rundschau* 81, no. 3 (1992).
[175] Broodbank, *An Island Archaeology of the Early Cyclades*, p. 78.
[176] Yiannis Bassiakos and C. Athanassas, *Aspects of Prehistoric Mining and Metallurgy in Greece* (Athens: forthcoming publication, 2007).

Siphnos is composed mainly of metamorphic rocks. The three ridges the northern peninsula and much of the west of the island, are formed of various hard marbles and schist. A band of softer schist and gneiss divides the northern peninsula gneiss and schist. Ore outcrops and abandoned mines occur in a band from the north-east to the west of the island and in a group in the south-east[177].

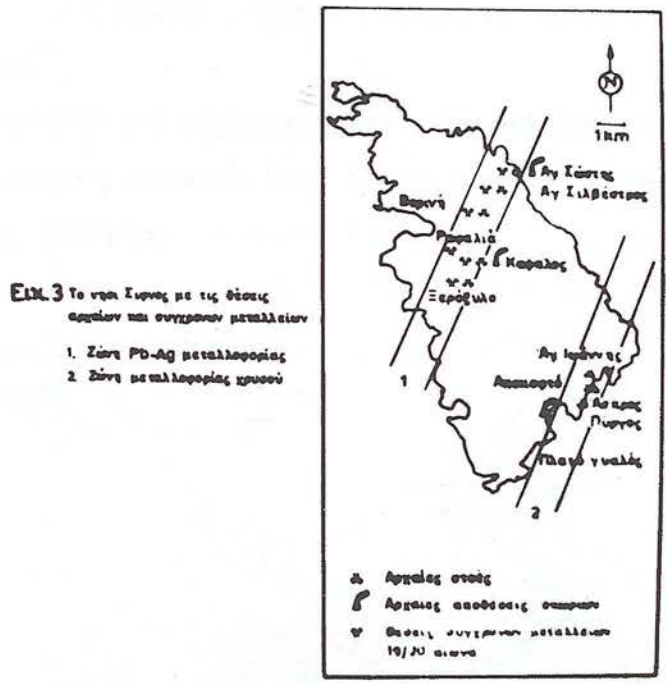

Figure 19. Siphnos with the locations of ancient mines (after Bassiakos)

Theophrastus alludes to the "Siphniote stone" in his book (*De Lapidibus* VIII, 42)[178] "there is a stone in Siphnos found about three stadia from the sea in round masses which is easily turned with a lathe and sculptured when it was burned and dipped in oil; and it then becomes very black and hard" and this is also quoted by Pliny (On Stones VIII, 42). The existence of this stone is unknown today but it seems that it was steatite, a kind of stone that is naturally soft but when it is burned it becomes hard and it was extensively used in antiquity for seals and moulds[179].

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[177] Yiannis Bassiakos, "Chronologiseis me ESR se archaio metalleio tis Siphnou (ESR Dating on Calcites from an ancient mine of the island of Siphnos)," in *Proceedings of the 1st International Sifnean Symposium*, ed. Tz. Zervoudakis (Athens: Society for Sifnean Studies, 2000), pp. 167-179.

[178] Theophrastus, *De Lapidibus. Greek & English / edited with introduction, translation and commentary by D.E. Eichholz* (Oxford: 1965), pp. 72-73.

[179] From personal communication with Dr Yiannis Bassiakos, the geologist who has undertaken the respective archaeometrical experiments in the Greek Nuclear Power Recearch Centre Demokritos".

The geographical position of the Cyclades suggests that its inhabitants were exposed to the surrounding small-scale communities of the Aegean and also to emergent, larger-scale societies from the near East. The first palace states on Crete had also a strong presence on the Cyclades[180]. Hence every investigation of internal Cycladic patterns has had to locate these patterns within larger contexts[181].

The seas around the Cyclades were explored from early Neolithic times by vessels carrying obsidian from Melos a much prized and highly demanded material. Distances between the islands are modest and they were navigable in prehistoric seacraft, as experiment has proven[182]. The islands have been explored by man from prehistoric times[183] (Figure 20).

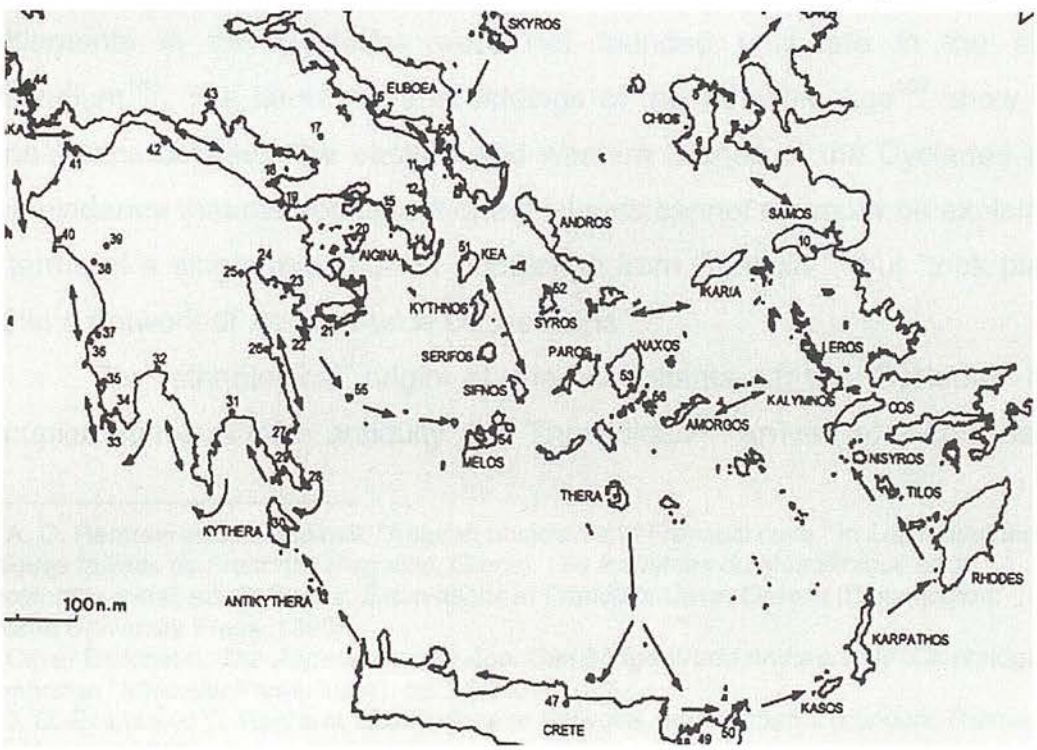

Figure 20. Map created by Christos Agouridis and published in the Oxford Journal of Archaeology 16(1): 1-24 (1997), showing Early Bronze Age (third millennium BC) sites in the Aegean, and the pattern of proposed connecting routes discussed in the text of the article, where the numbered sites are listed. Transport at this stage was by canoe, propelled by paddlers and without use of the sail. Note the multiple route segments, crossing between specific objectives in a series of steps.

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[180] Best preserved evidence on Thera (Santorini) where excavations are still revealing impressive findings. Mainly in Spyridon Marinatos, *Excavations at Thera*, 8 vols. (Athens: Archaeologiki Etaireia, 1968).

[181] Broodbank, *An Island Archaeology of the Early Cyclades*, p. 43.

[182] Ibid., pp. 101-106.

[183] C. Agouridis, "Sea routes and navigation in the third millennium Aegean," *Oxford Journal of Archaeology* 16 (1997): pp. 1-24.

Mainland findings from the Franchthi cave in Argolid of obsidian from Melos confirm early seafaring in the Aegean at a time (ca. 8300-6000 BC) when sea levels were well below present levels and inter-island distances consequently shorter[184]. From the end of the third millennium, there is definite archaeological evidence of direct maritime interaction between the Aegean and the eastern Mediterranean centres.

There is no agreed evidence among archaeologists of the earliest human occupation on the Cyclades[185]. Obsidian from Melos has been identified in caves in Peloponnesus used from the Palaeolithic to the end of the Neolithic Age and this confirms there was at this time a well established sea travel along the coast and between the islands. Even though the mainland and north settlements in Greece seem to have been quite advanced in Neolithic period (seventh millennium to the fourth) the earliest settlements in the Cyclades were not founded until late in the sixth millennium[186]. The latest material findings of the Neolithic Age[187] show the connections between the eastern and western islands of the Cyclades and give evidence that the settlement of the islands cannot anymore be explained in terms of a single migration of population from Anatolia[188] but "took place within a network of Aegean-wide connections"[189].

The ethnological origin of the inhabitants of the Cyclades has occupied scholars from antiquity and Thucydides[190] arrived at a conclusion

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[184] A. C. Renfrew and A. Aspinall, "Aegean obsidian and Franchiti cave," in *Les industries lithiques taillees de Franchthi (Argolide, Grece). Les industries du Mesolithique et du Neolithique initial*, ed. C. Perles, *Excavations at Franchthi Cave, Greece* (Bloomington: Indiana University Press, 1990).

[185] Oliver Dickinson, *The Aegean Bronze Age*, *Cambridge World Archaeology* (Cambridge: Cambridge University Press, 1994), pp. 31-33.

[186] J. D. Evans and C. Renfrew, *Excavations at Saliagos near Antiparos* (London: Thames and Hudson, 1968).

[187] From Franchthi and Lefkandi.

[188] Concepts of migration and diffusion introduced by Gordon Childe have been employed to explain the development in Aegean and Greek myths have been accepted as containing historical information to support the above theories. This approach has been criticised in A. M. Snodgrass, "The New Archaeology and the Classical archaeologist," *American Journal of Archaeology*, no. 89 (1985). The article also received criticism in its turn. Nevertheless, as stated in Dickinson (The Aegean Bronze Age), both theories are considered valuable for emphasising the necessity to explain the introduction of foreign ideas and populations "within the context of the continual processes of Aegean social development."

[189] Dickinson, *The Aegean Bronze Age*, p. 43.

[190] Thucydides, *The Peloponnesian War*, Book 1, VIII. "The islanders, too, were great pirates. These islanders were Carians and Phoenicians, by whom most of the islands were colonized, as was proved by the following fact. During the purification of Delos by Athens in this war all the graves in the island were taken up, and it was found that above half their inmates were Carians: they were identified by the fashion of the arms buried with them, and by the method of interment, which was the same as the Carians still follow. But as soon as

which accords with the above-mentioned theories of migration from Anatolia (Carians and Phoenicians) but this theory has been considered inaccurate; the problem of ethnology remains a complicated issue for archaeologists.

Concepts of migration and diffusion have been employed to suggest that this very early civilization was supported by agriculture and craftsmanship, combined with maritime trade. In an attempt to identify the original reason for the earliest settlements, it has been suggested that "the search of metals might have been a factor in the settlement of the Cyclades"[191] and more particularly, the "prospection for, and exploitation of, the metalliferous sources in the western Cyclades, principally on the islands of Siphnos and Kythnos"[192].

In the Bronze Age, the Cyclades enjoyed a flourishing culture, much influenced in the second millennium by the Mycenaean and Minoan cultures[193].

Early in the second millennium BC, the first palace states arose on Crete such as Knossos, Phaistos and Malia which influenced and reshaped the economy and culture that had existed previously[194]. From that time onwards, societies in the Cyclades would have been shaped by a maritime trade network extending from Egypt to the Aegean and later the Adriatic Sea[195]. After the destruction of Knossos around 1400 BC, the Mycenaeans took the place of the Minoans, controlling most of the trading activity in the Aegean[196] and this is reflected in the findings.

The term Cycladic was first used by the first archaeologist involved in the Cyclades, Christos Tountas[197], at the end of the nineteenth century,

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Minos had formed his navy, communication by sea became easier, as he colonized most of the islands, and thus expelled the malefactors."

[191] Dickinson, *The Aegean Bronze Age*, p. 44.

[192] Broodbank, *An Island Archaeology of the Early Cyclades*, p. 127.

[193] There is a rich bibliography on this very interesting and prosperous for the Cyclades period and the connections with both Minoan and Mycenaean cultures given in Dickinson, *The Aegean Bronze Age*, pp. 310-332.

[194] For an extensive account on third millennium in Cyclades see A. C. Renfrew, *The Emergence of Civilisation: The Cyclades and the Aegean in the Third Millenium B.C.* (London: Methuen & Co Ltd, 1972).

[195] A. G. Sherratt and E. S. Sherratt, "From luxuries to comodities: the nature of Mediterrenean Bronze Age trading systems," in *Bronze Age Trade in the Mediterrenean*, ed. N. H. Gale, *Studies in Mediterranean Archaeology 90* (Jonsered: Paul Astroms Forlag, 1991), pp. 351-386.

[196] Renfrew, *The Emergence of Civilisation: The Cyclades and the Aegean in the Third Millenium B.C.*, p. 457.

[197] Chr. Tountas excavation reports have been mainly published in the annuals of the Greek Archaeological Society (AE 1899 for Siphnos)

and ever since has been reserved for the Bronze Age culture of the Cyclades from about 3000 to 1100 BC. The chronological diagram that is followed in this research is the one given by MacGillivray and Barber[198].

This civilization had a "distinct, unified and localised character"[199] and "was not brought ready made to the Aegean"[200] but developed a cultural autonomy, according to Colin Renfrew. The well-known Cycladic marble idols, famous for their simplicity, the conscious preservation of proportions, and the harmonious synthesis of the parts executed with high quality craftsmanship, are the artistic evidence of an advanced civilization of which little other archaeological evidence has survived[201].

Trade, and especially the trade of metals, has been suggested as having been one of the leading factors in the genesis and subsequent prosperity of Cycladic civilisation[202].

Archaeological excavations have contributed to the confirmation of the above hypothesis since they have revealed the presence of numerous metal artefacts from as early as the late Neolithic period[203]. That was the main reason why scholars like Renfrew have suggested that metals probably were produced locally[204]. The latest evidence from archaeological findings but most importantly, from laboratorial research on these metal findings has verified this theory. Archaeological and technological research indicate that the Cycladic culture of the Bronze Age was mainly founded on the exploitation of native minerals and their trade, either in knots or in the form of final products[205].

The cultural technical and artistic achievements of this era would have accounted for the Mycenaeans having being given the title of the Heroic race as this race is described by Hesiod: "a noble and righteous, a god-like

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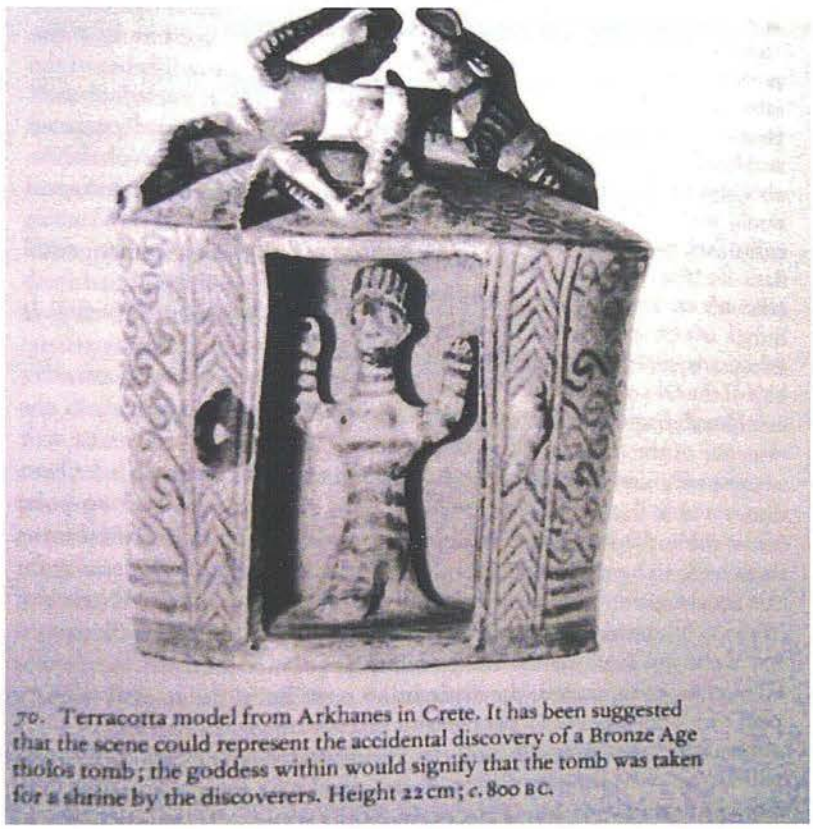
[198] J.A. MacGillivray and R.L.N. Barber, eds., *The Prehistoric Cyclades. Contributions to a Workshop on Cycladic Chronology* (Edinburgh: University of Edinburgh, 1984) p. 301.
[199] Barber, *The Cyclades in the Bronze Age*, p. 24.
[200] Renfrew, *The Emergence of Civilisation: The Cyclades and the Aegean in the Third Millenium B.C.*, p. 476.
[201] Michael Norris, *Greek Art : from prehistoric to classical* (New York: The Metropoletan Museum of Art, 2000), p. 27.
[202] Renfrew, *The Emergence of Civilisation: The Cyclades and the Aegean in the Third Millenium B.C.*, p. 479.
[203] N. H. Gale and Z. A. Stos-Gale, "Cycladic Metallurgy," in *The Prehistoric Cyclades. Contributions to a Workshop on Cycladic Chronology*, ed. R.L.N. Barber (Edinburgh: Edinburgh University, 1984), pp. 255-276.
[204] A. C. Renfrew, "Cycladic metallurgy in the Aegean Early Bronze Age," *American Journal of Archaeology* 71 (1967): pp. 2-26.
[205] Broodbank, *An Island Archaeology of the Early Cyclades*, pp. 159. On metals.

race who are called semi-gods" [206] that was placed in the so-called "myth of the races and metals" between the inferior bronze race of humans and the worthless iron one[207]. The admiration of later generations has been gained mainly from the re-discovery during the Geometric period (ninth and eighth century BC) of the impressive circular and vaulted structures known as Tholos-tombs[208]. The technical skill required and the scale of these magnificent structures inspired the people, who were still experiencing the symptoms of the Dark Age (around the ninth century BC), to believe that they were made by semi-gods and to consider them as sacred[209].



70. Terracotta model from Arkhanes in Crete. It has been suggested that the scene could represent the accidental discovery of a Bronze Age tholos tomb; the goddess within would signify that the tomb was taken for a shrine by the discoverers. Height 22 cm; c. 800 BC.

Figure 21. Terracotta model from Archanes in Crete. Snodgrass, The Dark Age of Greece, p. 193, fig. 70

The period after the fall of the Mycenaean civilisation (1200-700 BC) and the invasion of various tribes from the North (around 1200 BC), known

[206] Hesiod, *Works and Days*, pp. 157-160

[207] A very interesting analysis of this myth in Vernant, *Myth and Thought among the Greeks*, pp. 10 ff. Hesiod myth of races and metals : the *daemons* of the gold race (the souls of those who passed away) as *phulakes* are the guardians of mortals they see to it that justice is observed while , as *ploutodotai* -the dispensers of riches- they encourage the fertility of the soil and the increase of the flocks.

[208] There is extensive bibliography on Tholos tombs, a good selection given in Dickinson, *The Aegean Bronze Age*, pp. 232-233.

[209] There has been a reuse of these tombs around the beginning of the Geometric period either as tombs or shrines.

as the Dorian invasion has been described as the Dark Age of Greece[210]. The main reasons for considering the period as such, from an archaeological point of view, are the "drastic impoverishment in the archaeological record" and also the account of the Hesiod myths that describe this period as the time of an unworthy iron-race that succeeded the heroic one, famous for taking part in the Trojan War[211].

The so called Dorian invasion[212], -as named by Thucydides 1.12-, took place around 1200 BC and consisted of the migration of more than one tribe and triggered a sequence of movements within the Aegean region. The destruction of many Mycenaean cities, followed by prolonged desertion and the mass-migration of the Mycenaeans eastwards, indicates an invasion that consisted of Dorian, Boeotian and Thessalian migrations or a raid from barbarian Europe[213], which must have been followed by the withdrawal of the attackers[214]. The latter seems the most unlikely to have happened and the conviction that the immigrants "were Greek speakers from the outer fringes of the Mycenaean world, belonging to the same cultural milieu" is far more probable[215]. The archaeological evidence suggests that these immigrants were essentially indistinguishable in their material culture from the Mycenaean survivors.

That kind of evidence justifies the fact that the Greeks during the classical period believed in the unity of their race. Herodotus (Histories, VIII. 144)[216] describes "the kinship of the Greeks" as the second main reason for fighting unanimously against Xerxes and the Persians, the first being the destruction of their temples. That unity was perceived of as an accumulation of the different people that they recognised as divisions of the race: Aeolians,

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[210] A. M. Snodgrass, *The Dark Age of Greece. An archaeological survey of the eleventh to the eighth centuries BC*, 2 ed. (New York: Routledge, 2000). Most of the data about this period given in this thesis have been based on this book. The chronologies have followed the table given in pp. 134-5.

[211] Hesiod, Works and Days, 156-201. Loeb Classical Library.

[212] Most historians seem to agree that there was not an invasion of foreign tribes because there are no traces, not even burials, of a different culture than the Mycenaean. On this very interesting subject Osborne, *Greece in the Making 1200-479 B.C.*, pp. 32-37. For the evidence from the various dialects see in Snodgrass, *The Dark Age of Greece*, pp. 300-312.

[213] Marija Gimbutas, *Bronze Age Cultures in Central and Eastern Europe* (The Hague: Mouton, 1965), p. 339.

[214] Discussion and evidence given by Snodgrass, *The Dark Age of Greece*, p. 310.

[215] Ibid., p. 386.

[216] Herodotus, *Histories* book VIII, 144.2, "the kinship of all Greeks in blood and speech, and the shrines of gods and the sacrifices that we have in common, and the likeness of our way of life".

Ionians and Dorians[217]. The most important for the Aegean was the Ionian migration that was responsible for the first Greek colonies in Anatolia. They were also the people who migrated to the islands of the Cyclades and their origins were considered to be in Attica.

The period of the Iron Age in Greece "means exactly what it promises, the replacement by a predominantly iron-based economy of an older bronze-working culture"[218]. The Aegean skilled smiths were keen to adapt and develop the demanding craft of iron working, and iron ores are quite well represented in the Aegean islands[219]. This increased self-sufficiency probably led, especially in the Cyclades, to what has been described as "a breakdown in communications which left the various regions frozen, so to speak, at the point in metallurgical process which they had attained at its outset"[220]. Some basic materials such as copper and tin and commodities such as gold, ivory and amber, that had to be supplied by foreign sources, ran short in Greece, apart from in Crete which had kept in communication with Cyprus and had access to its resources. Attica and the Aegean islands remained isolated until around 900 BC when there was a revival of contacts with the Eastern Mediterranean and Cyprus.

The Aegean was certainly heavily depopulated and isolated "remaining stagnant in aspects of material culture"[221]. This stagnation had another implication; a fundamental continuity in the way of everyday life from the Bronze to the Iron Age. Within this continuity there were changes, like the rise (in the eighth century BC) of the importance of the sanctuaries that would later have a prominent position in the life of archaic and classical Greece[222]. The bulk of offerings, mainly to the sanctuaries of Olympia and Delphi, compared with the small number of tomb offerings, indicate this change in religious cult. The Minoan and Mycenaean religion favoured natural sites or others that were "insubstantial architecturally" as caves, a pillar or a tree, a

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[217] Leonard Whibley, ed., *A Companion to the Greek Studies*, Fourth ed. (New York and London: Hafner Publishing Company, 1963) p. 79.
[218] Snodgrass, *The Dark Age of Greece*, p. 213.
[219] Robert James Forbes, *Metallurgy in Antiquity: a notebook for archaeologists and technologists* (Leiden: E. J. Brill, 1950), pp. 384-388.
[220] Snodgrass, *The Dark Age of Greece*, p. 246.
[221] Ibid., p. 377.
[222] Ibid., pp. 275-285.

shrine or a room in a secular building[223]. Around 700 BC, there is evidence of a definite modification in the practice of the cult; great sanctuaries (sometimes erected on Mycenaean sites) came to prominence but without archaeological indications to suggest an unbroken practice of a cult during the whole of the Dark Age[224], even though tradition and literal sources claim continuity in the use of the main sanctuaries from the Bronze to Archaic times. The archaeological evidence -which consists mainly of figurines and offerings, in the absence of religious architecture up to the eighth century BC- for the sanctuary of Delphi, indicates that the cult did not begin before the eighth century. The island of Delos and the Idean Cave in Crete are among the few sites that could have been in use constantly from Mycenaean times.

Even though the preceding period (from 1200 up to the end of the tenth century) is characterised by "depopulation, isolation, metal-shortages, architectural and artistic impoverishment and sharp regional disparities"[225] and technological recession, there is also some evidence in certain crafts to suggest an unbroken continuity in their tradition which transcended the dark age and regenerated in the eight century. This is demonstrable in the case of the Cycladic stone-work, where there is an archaeologically documented reappearance of Mycenaean techniques in the eighth century (dry stone construction with schist slabs) at the same sites where it was practised during the Bronze Age, thus suggesting "an unbroken local tradition"[226].

The evidence taken from the customs and linguistic patterns, as observed by the end of the archaic period and probably already by the seventh century, suggest that "Athens, the Cyclades and Ionia shared certain institutions" - like the festival of Apatouria, which was the festival at which the young men were admitted into phratries - also names of the months and names for tribal divisions in their areas[227]. This affirms that these cultures were closely linked and probably had the same origin.

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[223] Gertrude Rachel Levy, *The Gate of Horn: A study of the religious conceptions of the Stone Age and their influence upon European thought* (London: Faber and Faber Limited, 1948), pp. 221-241.
[224] Snodgrass, *The Dark Age of Greece*, p. 397.
[225] Ibid., p. 402.
[226] Evidence from Keos, Naxos Ibid., p. 425.
[227] Osborne, *Greece in the Making 1200-479 B.C.*, p. 35.

Around the middle of the eighth century the exchange network between the Aegean and the Near East was re-enacted, as is shown by Greek pottery from the mainland and the islands, found in a number of coastal sites in the Levant including Tyre, where there are even tenth century potsherds from Greece[228]. The most likely commodity to have been exchanged in this trade route was metals. Even though the mode of supply and demand had changed during the Dark Age, metals never ceased to be important for practical purposes and weaponry but also for prestige. Their supply, (iron, tin, and bronze from Cyprus) was one of the very early indications of a recovery in the Aegean, at least of certain groups who could secure their supply "exchanging for them whatever raw materials or finished products were in demand"[229]. The exploitation of metal ores must have been also the reason for the settlements of Greeks in Western Italy (Pithekoussai) and Etruria which have been described as "a product of and as itself a contribution to, a very rapidly increasing Greek involvement in the exchange of metals and other goods"[230].

Along with metals the Greeks also imported from their eastern neighbours some letters of the Phoenician alphabet as early as the ninth century. The Mycenaean literal tradition of the palaces –known as Linear B and A- was lost and forgotten and written texts using Phoenician[231] letters appeared in the middle of the eighth century BC, creating a new system of communication between people in different places and time. The advent of writing enabled the oral tradition of the previous centuries in the form of epic poetry to survive, substantially in the form it had acquired around 700 BC: the *Iliad* and the *Odyssey* are epic works ascribed to Homer and the *Theogony* and *Works and Days* of Hesiod.

From the end of the eighth century, there was an unprecedented expansion of the Greek world, in the west and around the Black Sea, in the form of *apoikiai,* that is, self-governing settlements that retained a strong

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[228] Ibid., p. 112.
[229] Ibid., p. 114.
[230] Ibid., p. 118.
[231] Herodotus 5.58-61: "At this time the Greeks who were settled around them were for the most part Ionians, and after being taught the letters by the Phoenicians, they used them with a few changes of form. In so doing, they gave to these characters the name of Phoenician, as was quite fair seeing that the Phoenicians had brought them into Greece."

ancestral but not political or economic connection with the mother-city (metropolis). The main factor that caused what has been called the "Greek colonisation" was, according to most historians, population growth,[232] while others attribute this expansion mainly to social changes in the structures of the Greek polis, as suggested by the change in burial customs and the increasing importance that certain sanctuaries acquired[233]. Contact with different places did not mean simply access to desirable minerals but also to contact with different peoples who were differently organised and offered a model for emulation and self-criticism. The results of the experience of "otherness" accelerated and contributed to the self–awareness of the Greeks and the birth of philosophy in Ionia (Asia Minor) in the seventh century[234]. Philosophy arose with the attempt to speak in the same (rational) way about everything, the general form of being, *ta onta*. Tradition was not expelled but it was only in the form of myths that it was taken into account in order to describe cosmogony, the genesis of the world.

At about the same time (seventh century)[235], the coining of money was adopted from Lydia and quickly spread all over Greece[236]. Lumps of standard weight of metals like electrum (a natural occurring alloy of gold and silver that was the first metal to be used as coin), bronze and silver were incused with a mark –and later when they were reused, even with a countermark or counterstamp as it is called in numismatics[237]- to indicate that they were indeed of a standard weight and also to indicate their origin or issuing

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[232] This view is supported mainly by A. M. Snodgrass, *Archaeology and the Rise of the Greek State, Inaugural lectures* (Cambridge: Cambridge University Press, 1977). Also on the significance of the depopulation in A. M. Snodgrass, *Archaic Greece. The Age of Experiment* (London, Melbourne, Toronto: J. M. Dent & Sons, 1980), pp. 21-24.

[233] This view is supported by Ian Morris, *Burial and Ancient Society. The rise of the Greek City State, New Studies in Archaeology* (Cambridge: Cambridge University Press, 1987). Also in Osborne, *Greece in the Making 1200-479 B.C.*, p. 119.

[234] On this very interesting and vast subject there is a good introduction in F. M. Cornford, "Mystery Religions and Pre-Socratic Philosophy," in *Cambridge Ancient History*, ed. J. B. Bury (Cambridge: 1939).) and also Karl Popper, *The World of Parmenides. Essays on the Presocratic Enlightenment* (London: Routledge, 2001).

[235] Osborne, *Greece in the Making 1200-479 B.C.*, pp. 251-259. See also Christopher Howgego, *Ancient History from Coins, Approaching the Ancient World* (London: Routledge, 1995).

[236] On the origin and function of earliest coins there has been a heated debate among experts the past fifty years, in which divergent opinions have been expressed. For a full list bibliography and the various suggested propositions, see in Valentina di Napoli, "The silver coinage of Siphnos during the Archaic and Classical period," in *Proceedings of the 2nd International Sifnean Symposium Siphnos 27-30 June 2002*, ed. Tz. Zervoudakis (Athens: Society for Sifnean Studies, 2005), pp. 197-206.

[237] John Melville Jones, *A Dictionary of Ancient Greek Coins* (London: Seaby, 1986), p. 60.

authority. The rapid diffusion of the idea of coinage continued throughout the sixth century and the vast majority of the Greek cities, even the minor ones, began producing their own distinctive coinages, mainly in silver but in a number of weight standards and different denominations. Coinage had generally been instituted for the advantage of the city-state and soon became an object of trade. An exceptional way of putting coins into circulation was "the distribution of surplus public funds among citizens"[238] which was most probably confined to Siphnos, where there was an annual distribution[239], and Athens, which both had prominent local mineral resources.

The rise of the city-state as a political unit coincided with the general disappearance of hereditary monarchies. In the few cases that survived, the word *basileus*, king, which is used, "apparently signified a mere nobleman or petty chieftain."[240] In the polis hierarchy, lesser subdivisions of the tribe seem to have survived in the formation of phratries or brotherhood, which was a kinship grouping[241]. Polis institution meant political independence and political unity and religious cults united the citizens by devotion to the same gods and in participation to the same festivals; its citizens accepted a common cult with a patron deity over each state, usually female. At the end of the eighth century BC, the construction of the city temple began. Snodgrass suggests that the Phoenician model of a city, like Tyre and Sidon, could have influenced the rise of the Greek polis because in the eighth century, "Graeco-Phoenician relations were on a familiar level without becoming indiscriminately close – just as they are portrayed in the Odyssey, in fact."[242]

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[238] Colin Mackennal Kraay, *Archaic and Classical Greek Coins*, ed. Philip Grierson, *The Library of Numismatics* (London: Methuen & Co, 1976), p. 322.
[239] Herodotus, *Histories*, III, 57
[240] Snodgrass, *Archaic Greece. The Age of Experiment*, p. 29.
[241] Phratries are analysed as a social, political and religious unit below, in Chapter 6 of the present thesis. See also Martin P. Nilsson, *Cults, Myths, Oracles, and Politics in Ancient Greece. With two Appendices: the Ionian Phylae, The Phratries*, ed. 8° Skrifter utgivna av Svenska institutet i Athen, *Studies in Mediterranean archaeology ; Pocket-book 44* (Lund: P. Åström,, 1951). And also Snodgrass, *Archaic Greece. The Age of Experiment*, p. 25-26.
[242] Snodgrass, *Archaic Greece. The Age of Experiment*, p. 34.

Siphnos

The name Siphnos comes from the adjective σιφνός, meaning void, and thus probably indicates the numerous subterranean mining tunnels[243].

The archaeological evidence of the earliest settlements on Siphnos come from the excavations[244] at Platys Gialos and Vathi that revealed cemeteries and traces of housing that date from the third millennium BC and the Mycenaean (1400–1100 BC) citadel on the Acropolis of Agios Andreas[245]. The Acropolis of Kastro lies at the eastern part of the island and during the excavations undertaken by the British Archaeological School at Athens, from 1935 until 1937, under the guidance of J. K. Brock and G. M. Young[246] they unearthed very important evidence dating from the Geometric epoch up to Roman times.

An archaeological map of Siphnos (Figure 11) can be reconstructed from the above archaeological evidence and the results of the research that has been carried out during the last twenty years by the Greek Archaeological Department[247].

Siphnos was one of the intermediate stages in the early marine voyages between Melos and the Peloponnesian mainland for acquiring the precious obsidian. These sea routes that carried the obsidian, along with other artefacts from island to island were used from early Neolithic times (ninth millennium)[248] as has been indicated from the Franchti findings in Argolid (Peloponnesus) and the potsherd findings decorated with an inlaid

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[243] A. Simosi, "Siphnos: a crossroad of the ancient sea routes," in *Proceedings of the 2nd International Sifnean Symposium Siphnos 27-30 June 2002*, ed. Tz. Zervoudakis (Athens: Society for Sifnean Studies, 2005), p. 337.

[244] Excavations began with Pollak in 1896 (Ludwig Pollak, "Von griechischen Inseln," *Mitteilungen des Deutshen Archaeologischen Instituts in Athen* XXI (1896).)
In 1896 they were continued by Tsountas (Ch. Tsountas, "Cycladica II," *Archaeologiki Ephimeris* (1899).) and between 1970 – 1980 by B. Philippaki (in Greek, mainly published in Praktika Archaeologikis Etaireias)

[245] A complete account of the results of the excavations on Siphnos in Stavroula Samartzidou, "Siphnou Archaeotites - Antiquities of Siphnos," in *Proceedings of the 1st International Sifnean Symposium Siphnos 25-28 June 1998*, ed. Tz. Zervoudakis (Athens: Society for Siphnean Studies, 2000), p. 33-49.

[246] The results of these excavations have been published in J. K. Brock and G. M. Young, "Excavations in Siphnos," *Anual of the British School in Athens* 44 (1949).

[247] The excavations have been "systematic" on Kastro and Agios Andreas but in various sites were "rescuing" meaning that they had to be carried out on the demand of the landlord for redevelopment. The findings that have been published are mainly in *Archaeologikon Deltion* which is the annual publication of the Greek Ministry of Culture.

[248] Simosi, "Siphnos: a crossroad of the ancient sea routes."

pattern that were found in Agios Ioannis in Siphnos which have been suggested as being the earliest Neolithic pottery findings in the Cyclades[249]. These impressive wares have been compared with Thessalian and Macedonian Early Neolithic pottery types.

Interdisciplinary research during the last twenty years has proven the importance of Siphnos for early metallurgy in the Aegean. It has been proven by isotope analysis[250] on lead and silver early Cycladic objects found in Naxos, Antiparos, Syros, and Kea that the metals used for these artefacts came originally from Siphnos and Laurion. Siphnos was rich in lead and silver ore deposits and that constituted the island as one of the two main sources of silver and lead in the Cyclades and the Aegean from the beginning of the third millennium BC at least[251].

Recent archaeological evidence suggests that Siphnos was inhabited in the Final Neolithic Age and there were quite a few settlements during the Early Bronze Age. Seven sites have been identified dating to these early periods: Agios Sostis, Kastro Agios Andreas, Vathy Platys Yialos, Akrotiraki and Ayios Ioannis (Figure 22)[252]. The small peninsula of Agios Sostis, at the north-east of the island, has given convincing evidence of mine-workings during the third millennium BC[253]. Pottery and mining findings from the site indicate that the exploitation of the Agios Sostis mines started in the Final Neolithic and lasted for most of the Early Bronze Age. The Agios Sostis silver mine has been proved by laboratory methods of dating (thermo-luminescence)[254], to have been the oldest known silver mine in the world (approximately 2700 BC)[255].

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[249] J. L. Davis, "Review of Aegean Prehistory I: The Islands of the Aegean," *American Journal of Archaeology* 96 (1992): p. 729, n. 131.
[250] N. H. Gale and Z. A. Stos-Gale, "Lead and Silver in the Ancient Aegean," *Scientific American* (1981): pp. 186, 191. Also in Gale and Stos-Gale, "Cycladic Metallurgy," p. 258.
[251] P. I. Sotirakopoulou, "Siphnos in the Early Bronze Age," in *Proceedings of the 1st International Sifnean Symposium Siphnos 25-28 June 1998*, ed. Tz. Zervoudakis (Athens: Society for Sifnean Studies, 2000), pp. 81-98.
[252] Ibid., p. 83, map.
[253] Barber, *The Cyclades in the Bronze Age*, pp. 108-110.
[254] Yiannis Bassiakos, "H archaea elliniki metalleia kai oi scheseis tis me tis geoepistimes," *Deltio Ellinikis Geologikis Etaireias* (1993).
[255] G.A. Wagner and G. Weisgerber, "Silber, Blei und Gold auf Siphnos- Prahistorische und antike Metallproduktion," *Der Anschnitt*, no. 3 (1985).

Figure 22. Bronze Age settlements and mines in Siphnos. Sotirakopoulou 2000

Indications of habitation and metallurgical activity have also been evidenced, dating to the same period (Final Neolithic up to the Bronze Age), at the site of Akrotiraki, at the south-east of the island.

Surveys have shown that the amount of scoriae (a by-product from smelting) that have been found on the island itself is insignificant compared with the estimated ore production. The above, combined with the fact that half of the metal used (from the so far analysed silver findings from all over the Hellenic areas) has proven to have come from Siphnos, suggests that the

ores were transported for smelting to other areas like Laurion[256] and Lemnos[257]. The practice of transferring ores from their place of origin to another site to be smelted must have been quite common and is attested to in literature sources from antiquity[258].

Mining activity was very prominent during the sixth century BC as the literature sources reveal. The archaeological findings and the geological research, plus the laboratory research of archaeometry verify these sources. The wealth that the islanders enjoyed was the reason that after the rebels against the tyrant of Samos Polycrates were defeated, they sought refuge in Siphnos as Herodotus testifies.

The profit from the mines was distributed equally between the Siphnians, as is attested by Herodotus and this probably indicates that most of them must have been engaged in the mine workings.

The confidence derived from their wealth, along with a desire to declare their identity and independence led the Siphnians to be extravagant. The most celebrated example, already from antiquity[259], and proof of their prosperity was the erection of the Siphnian Treasury in Delphi, a building dedicated by the Siphnians to Apollo and the famous oracle[260].

The choice of the sanctuary at Delphi over the more obvious choice of the closer and equally famous and respected pan-Hellenic sanctuary of Delos, which was the legendary birthplace of Apollo and a Cycladic island, has been questioned. The explanation given by scholars is that the main difference between the two sanctuaries is that Delphi had a famous and powerful oracle, which could provide the Siphnians with divine advice on the fate of their mineral wealth[261]. The Siphnians also were awarded by the oracle with the priviledge of *promanteia,* which resulted in the Siphnians

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[256] Kakavoyiannis and Kakavoyianni, "The Diachronic Relations of Siphnos with Laurion," pp. 187-200.
[257] Simosi, "Siphnos: a crossroad of the ancient sea routes," p. 341.
[258] Strabo V, 2.16.
[259] Herodotus refers to the building in his Histories "as rich as any that there is". See below
[260] The most complete work for this building remains G. Daux and E. Hansen, *Le Tresor de Siphnos*, 2 vols., *Fouilles de Delphes. Topographie at architecture ; t.2* (Paris: Boccard, 1987).
[261] Panos Valavanis, "Thoughts on the Dedication of the Siphnian Treasure at Delphi (in Greek with English summary)," in *Proceedings of the 1st International Sifnean Symposium Siphnos 25-28 June 1998*, ed. Tz. Zervoudakis (Athens: Society for the Sifnean Studies, 2000), pp. 301-314. Delos had also an oracle but it never acquired the fame or credibility of the Delphian oracle.

having priority, above other cities, in consulting the oracle, an advantage which seems to have been of vital importance to them[262].

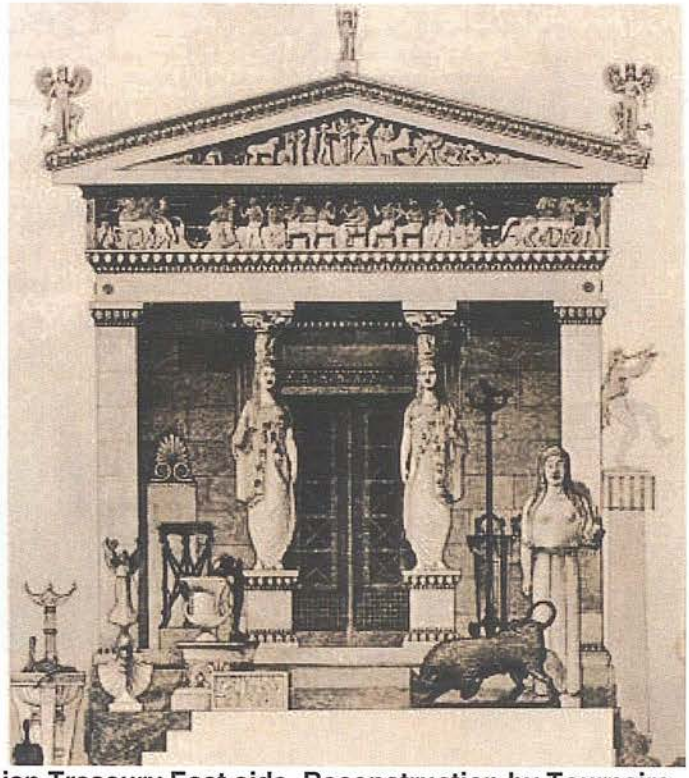

Figure 23. Siphnian Treasury East side. Reconstruction by Tournaire

The Siphnian treasury was the most elaborate building of antiquity in Greece and was considered by other Greeks as an ostentation's display of wealth. The treasury was erected around 530-525 BC. At the time it was constructed, it was the only structure to be made wholly of marble not only at Delphi but probably on the Greek mainland. The plan of the treasury is typical of this kind of building (cella with prodomos distyle in antis) and the presence of two caryatids in place of the supporting columns in each porch is impressive but "for all its charm, has the fault of over-elaboration"[263]. Both pairs of caryatids had elaborate capitals between their heads and architraves. These capitals consisted of a cylindrical member, called polos, with figures, which was surmounted by a carved, large projecting echinus and that by an abacus.

[262] Ibid., pp. 304-305.
[263] This is a view expressed in D. S. Robertson, *Greek and Roman Architecture*, Second paperback 1977 ed. (Cambridge: Cambridge University Press, 1977(1929)), p. 100.

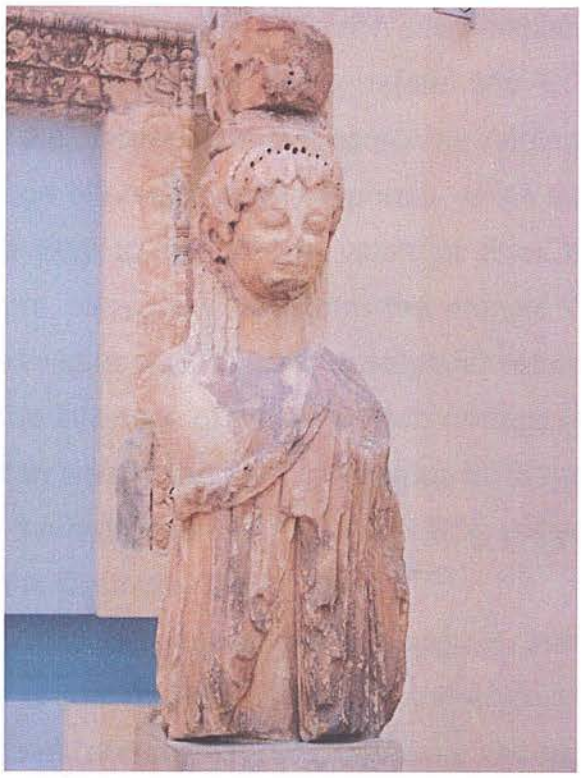

Figure 24. The Caryatid from the Siphnian Treasury and part of the decorated portico at the back. (Delphi Museum)

The surviving parts of the elaborately decorated door indicate artistic intervention from Paros, where the marble also comes from. This early Ionic building displays some architectural innovations, like the sculptured frieze in place of dentils -that would be later characteristic of the Ionic style- and the unusual and rare mixture of Doric features, like the pedimental sculpture.

The excavations on the Acropolis of Kastro undertaken by the British[264], revealed that the city walls were also made of marble exactly as Herodotus had suggested and this confirms the legendary display of extravagance of the Siphnians. According to Sheedy, it was a display of the richest of the islanders "the self identity of the Siphnians as projected by the buildings and artefacts which were commissioned at public expense"[265].

Siphnian silver was used extensively in Aeginetan coins. The island of Aegina minted silver coins earlier (sixth century BC) than the mainland Greek cities despite the fact that it had no silver resources of its own and it depended on trading to acquire silver, most probably from Siphnos, as the archaeological evidence and the lead isotope analysis contacted on

[264] Brock and Young, "Excavations in Siphnos," p. 5.
[265] Kenneth Sheedy, "The richest of the islanders," in *Proceedings of the 1st International Sifnean Symposium Siphnos 25-28 June 1998*, ed. Tz. Zervoudakis (Athens: Society for Sifnean Studies, 2000), p. 219.

Aeginetan coins has shown[266]. The rich silver mines in Laurion (Attica) were not worked on a productive scale before 510 BC[267] and the ores from Siphnos were the closest abundant source for Aegina.

Coinage offered cities like Siphnos, which had local silver resources, "a convenient way to realise the value of their bullion"[268]. Even though coinage did not completely transform the archaic Greek economy, it was, from the beginning, a way to mark identity and assert independence or mark friendships. The influence of the Aeginetan coinage is evident in the adoption of the Aeginetan weight standards and types by the earliest Siphnos coinage, also dated to the sixth century (about 535 BC), making Siphnos probably the first island in the Cyclades to mint coins[269].

The archaeological evidence suggests that Siphnos was also the last city state of the Cyclades (with the exception of Melos) that ceased to strike silver coins around 460 BC, probably because Siphnos entered the Delian League which was founded in 478 BC and Athens exerted its influence on the island, imposing Athenian currency, an intention that would be clearly exemplified by issuing the Athenian currency decree a few years later (450-449 BC)[270]. The silver of Siphnos would continue to be traded for its intrinsic value as precious metal.

After the Persian wars, Siphnos was tightly bound to Athens and the vicissitudes of the Delian League. The Athenians took full control of the confederation when the treasury of the League was removed from Delos to Athens. The contribution of Siphnos to the treasury of the League was three talents, according to the Athenian tribute list of 450-449 BC[271]. This amount is considered to be quite insignificant compared with other cities' contributions and, combined with the fact that Siphnos had ceased to mint coins, probably indicates that the ore production of the island had began to decline. The contribution of the Siphnians was raised to nine talents in 425 BC by Cleon, who reorganised the tributes of the Athenian allies, and

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[266] N. H. Gale, W. Gentner, and G. A. Wagner, "Mineralogical and Geographical Silver Sources of Archaic Greek Coinage," in *Metallurgy in Nomismatics*, ed. W. A. Oddy, *Special publication No 13* (London: Royal Numismatic Society, 1980), pp. 33-43.
[267] Ibid., pp. 29-33.
[268] Osborne, *Greece in the Making 1200-479 B.C.*, p. 257.
[269] Napoli, "The silver coinage of Siphnos during the Archaic and Classical period," p. 197.
[270] E. S. G. S. Robinson, "The Athenian currency decree and the coinages of the allies," *Hesperia, Supplement*, no. 8 (1949): p. 324.
[271] Benjamin Dean Meritt, H.T. Wade-Gery, and Malcolm Francis McGregor, *The Athenian tribute lists*, 4 vols., vol. 1 (Cambridge Mass.: Cambridge University Press, 1939), p. 579.

remained unchanged until 418 BC. Plausible explanations that have been suggested for this increase are: that the Athenians needed and "demanded higher sums without taking into account the real economic possibilities of the allies" [272] and; that for some reason, the production of silver in Siphnos increased, maybe by applying more advanced techniques to the extraction of the ores. The archaeological evidence suggests[273] that Siphnos began to strike silver coins again at the end of the fifth century BC and during the first quarter of the fourth century. These coins have an outstanding quality and beauty, which is a strong indication that "the level of the wealth in the community had recovered after the plausible end of the silver mines around the end of middle of the fifth century"[274]. The fact that Siphnos ignored the Athenian currency decree, (see above) which was a decree intented to prevent the minting of silver coins in all the allied cities specifying the metal *αργύριον* (silver) and also forbids the use of currency, weights, and measures other than Athenian, is an explicit declaration of the confidence that the Siphnians had gained from the regeneration of their mining activity.

The number of Siphnian coins that have been found is very small compared with the reputation of wealth that they had in antiquity. This could be just a coincidence but it could be also explained by suggesting that most of the silver from Siphnos was traded for its intrinsic value as metal and in the form of ore. The city of Aegina used for its coinage silver that indeed came from the mines of Siphnos (see above) and this was also the case for other cities like Paros and even the city of Athens.

Apart from metals, Siphnos was also producing excellent quality clay which was used by other islands like Amorgos to decorate and upgrade their own pottery[275]. The potsherds from Siphnos are few, compared with the findings in other sites (Athens, Kea or Chios). They are distinguished by the diversity of the depicted subjects and most importantly, the high quality of the elaboration and the advanced technique indicated in the finishing touches. Most of the Siphnian relief pottery dates to the sixth century BC and it must

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[272] Napoli, "The silver coinage of Siphnos during the Archaic and Classical period," p. 202.
[273] E. T. Newell, "A Hoard from Siphnos," *Numismatics Notes and Monographs*, no. 64 (1934).
[274] Napoli, "The silver coinage of Siphnos during the Archaic and Classical period," p. 202.
[275] In Amorgos and other islands Lila Marangou, "Relations between Siphnos and Amorgos," in *Proceedings of the 1st International Sifnean Symposium Siphnos 25-28 June 1998*, ed. Tz. Zervoudakis (Athens: Society for Sifnean Studies, 2000), pp. 406-420.

be connected with the general prosperity that the people of the island enjoyed at that time. Selection of the iconographic themes indicates influence from north-eastern Greek areas and the employed techniques (production of decoration with the same roulette stamp) imply the propagation of an Attic fashion[276].

Literary sources

Herodotus is the first authority who mentions the Siphnians in his book *Histories* written in the middle of the fifth century BC. He refers, with admiration to the mines of Siphnos and the wealth that had given the Siphnians the ability to finance the most extravagant and elaborate projects like the Siphnian treasury:

> "When the Lacedaemonians were about to abandon them, the Samians who had brought an army against Polycrates sailed away too, and went to Siphnos; for they were in need of money; and the Siphnians were at this time very prosperous and the richest of the islanders, because of the gold and silver mines on the island. They were so wealthy that the treasure dedicated by them at Delphi, which is as rich as any there, was made from a tenth of their income; and they divided among themselves each year's income. Now when they were putting together the treasure they inquired of the oracle if their present prosperity was likely to last long; whereupon the priestess gave them this answer:
>
> When the prytaneum on Siphnos becomes white
> And white-browed the market, then indeed a shrewd man is wanted
> Beware a wooden force and a red herald.
>
> At this time the market-place and town-hall of Siphnos were adorned with Parian marble.
>
> They could not understand this oracle either when it was spoken or at the time of the Samians' coming. As soon as the Samians put in at Siphnos, they sent ambassadors to the town in one of

[276] Eva Simantoni-Bournia, *Wares from the Ancient Siphnian poterry kilns*, ed. Tz. Zervoudakis, 3 vols., vol. 1, *Proceedings of the 1st International Sifnean Symposium Siphnos 25-28 June 1998* (Athens: Society for Sifnean Studies, 2000), p. 383.

their ships; now in ancient times all ships were painted with vermilion; and this was what was meant by the warning given by the priestess to the Siphnians, to beware a wooden force and a red herald. The messengers, then, demanded from the Siphnians a loan of ten talents; when the Siphnians refused them, the Samians set about ravaging their lands. Hearing this, the Siphnians came out at once to drive them off, but they were defeated in battle, and many of them were cut off from their town by the Samians; who presently exacted from them a hundred talents."[277]

Herodotus is referring to the historical events that took place in the reign of Polycrates, tyrant of the island of Samos from circa 532 BC to 522 BC. The Lacedaemonians laid siege to Samos for 40 days in aid of the Samians who had rebelled against the tyrant. But Polycrates brought a strong army and finally succeeded in driving them off. The Samians who had fought against him could no longer stay in Samos and so they sailed to Siphnos. When they arrived, they asked the Siphniots, who were "richer than any other island people", to lend them ten talents. Having been refused the loan, they began looting the countryside. The Siphniots tried to protect their land but they were cut off from the cities and were defeated. The Samians then exacted 100 talents instead of the initial ten and they finally left. The raid on Siphnos by Samian political exiles is dated to 525 BC[278].

Pausanias much later in the second century AD also refers to the mines of Siphnos in his *Guide to Greece* in his description of the Delphic oracle:

"The Siphnians too made a treasury, the reason being as follows. Their island contained gold mines, and the god ordered them to pay a tithe of the revenues to Delphi. So they built the treasury, and continued to pay the tithe until greed made them omit the tribute, when the sea flooded their mines and hid them from sight."[279]

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[277] Herodotus, *Histories*, III 57-58, the text is based on the following book: *Herodotus*, with an English translation by A. D. Godley. Cambridge, Harvard University Press, 1920.
[278] Ashton, *Siphnos. Ancient Towers B.C.*, p. 14.
[279] Pausanias, X,11,2-3.

From the above references, we know that around the last quarter of the sixth century BC the Siphnians were among the wealthiest of Greeks, as the remainder of the yield from the mines was shared out each year among the islanders. The exact time the mines were flooded is not known, but archaeological research confirms it happened sometime in antiquity.

The Roman geographer Strabo in the first century BC records in his *Geography* (X. 5, 1):

> From Cimolos Siphnos is visible, in reference to which island, because of its worthlessness, people say "Siphnian knuckle-bone"[280].

It is most probable that in Strabo's time, the economy of Siphnos had deteriorated to the point that the expression "Siphnaios astragalos" (the phrase is a proverb applied to worthless people or things) or Siphnian Knucklebone became for the island, a name equivalent to complete and utter worthlessness[281]. This is attributed to the fact that the mines of the island were not productive and probably not operating anymore[282]. There seems to have been a kind of irony in the use of the name, due to the fact that knuckle bones are hollow (like Siphnos must have been with all these subterranean galleries) and maybe because ingots in the shape of knuckle bones or dice are known to have been used for tin, a very useful metal but with limited value compared to gold and silver[283].

The decline of Siphnos and the shortage of its mineral wealth must have occurred after Herodotus died, about 420 BC, and before the death of Aristophanes in 385 BC, as it can be estimated, according to the literal and archaeological evidence[284]. This period (420-385 BC) just after the Peloponnesian War and the defeat of Athens by the Spartans, coincides with a deep crisis in the relationships between Siphnos and Athens. In the

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[280] Strabo. ed. H. L. Jones, *The Geography of Strabo.* (Cambridge, Mass.: Harvard University Press; London: William Heinemann, Ltd. 1924)

[281] Knuckle-bones were widely used in ancient times as game pieces but also served a ritual function as offerings in both funerary and religious contexts and possibly as divining tools according to Garth H. Gilmour, "The nature and function of Astragalus Bones from archaeologigal contexts in the Levant and Eastern Mediterrenean," *Oxford Journal of Archaeology* 16 (1997).

[282] This is the view supported by all scholars who are interpreting knucklebone as meaning "worthless". Ashton, *Siphnos. Ancient Towers B.C.*, pp. 17-21.

[283] Ingots of this shape were mainly from the Kassiterides Islands known now as British, in J. R. Partington, *Origins and Development of Applied Chemistry*, First ed. (London, New York, Toronto: Longmans, Green and Co, 1935), p. 444-445.

[284] Ashton, *Siphnos. Ancient Towers B.C.*, p. 20.

Isocratic speech of *Aegineticus* [285], it is implied that Siphnos has followed the fate of the other Cycladic islands to impoverishment and decline.

We have more testimonies for that misfortune. Around the turn of the centuries AD and BC, the poet Antipater from Thessalonica wrote a poem entitled "On the Greek Islands", where we find an epigram preserved in the *Palatine Anthology* (9.421) referring to the decline and impoverishment of Cyclades "imitating Siphnos" *Σίφνον εμιμήσασθε*[286].

Economy

There is enough evidence to suggest that the trade of obsidian was the very first commercial act in the Cyclades. Navigation was not very easy using primitive vessels but as has been proven by experimental archaeology, it was quite possible from the end of the third millennium[287]. The Cyclades in the Bronze Age (from the third millennium on) were considered as "the most important crossroads and melting-pot of Aegean cultures" one of the key areas in the Aegean that along with other important trade centres, such as Knossos, Troy, Euboea and Argolid, created a dense network of commercial sea routes[288].

Within this network, contacts were a common feature even though not always without hostility. Occasional raids were a common practice since "trading and raiding are sometimes the two sides of the same coin" as is stated both by Agouridis and Ormerod[289]. King Minos of Crete, according to Thucydides, was the first to acquire a fleet to control the seas and rule the Cyclades (Thuc. I, 4). There is also a curious story in Plutarch, *Theseus* 19 from Cleidemus regarding police work done by Jason in the Argo.

Raiding and enslavement became an even greater risk later, with the greater demand for slaves that arose with the growth of industrialism in Greece and the number of pirates probably increased in the eighth century BC[290]. Mine workings and the building trade required both specialists and general labourers. Apart from wars or trade with the so-called "barbarians"

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[285] Isocrates, *Aegineticus*, 19. 1-36
[286] Citti, Vittorio, 1932- Anthologia graeca An Index to the Anthologia graeca: anthologia palatina and planudea / [Vittorio Citti et al.] Amsterdam: Hakkert, 1985-1990.
[287] Broodbank, *An Island Archaeology of the Early Cyclades*, p. 103.
[288] Agouridis, "Sea routes and navigation in the third millennium Aegean," p. 19.
[289] Ormerod, *Piracy in the Ancient World. An essay in Mediterranean History*, pp. 67 ff.
[290] Ibid., p. 95.

like the Thracians and the Phoenicians[291], the capture of pirates must have been a source of supply.

Siphnos, like most of the other Cycladic islands, could not sustain a large population[292] mainly due to its limited arable land and the fact that the Cyclades are the driest part of the southern Aegean in rainfall, combined with the limited spring resources on most of the islands[293]. For the same reasons, they have never developed subsequently a strong agrarian economy. The ox-drawn plough for example could not be easily used on the Cyclades due to the existence of terraces with limited land so island agriculture most probably took the form of "small intensively hoed fields"[294]. It was the development of tree crops like olives, wine and figs that enriched the previously restricted farming activity which consisted of a limited range of cereals and a small number of livestock[295]. The Cycladic economy had relied on seafaring since the beginning of the Bronze Age because of location and good harbours. The islands have provided ports and markets of exchange at different periods in history.

Objects of value, mainly of metal-like daggers of bronze and plates of gold and silver can be clearly attributed to the third millennium in the Cyclades. They imply considerable prestige and they form the first clear expression of wealth in the archaeological record and also provide evidence of trading activities in the Aegean, mostly carried out by the Cycladic islanders[296]. The sources of their wealth and the explanation for the massive growth in exchange of valuable materials that it implies, "remain problematic; certainly there is nothing to associate it with an intensification of agriculture."[297]

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[291] For the sale of Thracian children see Herodotus V, 6. "Among the rest of the Thracians, it is the custom to sell their children for export and to take no care of their maidens, allowing them to have intercourse with any man they wish. Their wives, however, they strictly guard, and buy them for a price from the parents".
For the slave trade with the Phoenicians see in the Bible, Joel, III, 6. "Because you have taken my silver and my gold, and have carried my finest treasures into your temples. And have sold the children of Judah and the children of Jerusalem to the sons of the Greeks"

[292] J. F. Cherry, "A preliminary definition of site distribution on Melos," in *An island Polity: The Archaeology of Exploitation in Melos*, ed. M. Wagstaff (Cambridge: Cambridge University Press, 1982), pp. 10-23.

[293] Broodbank, *An Island Archaeology of the Early Cyclades*, pp. 76-80.

[294] Ibid., p. 82.

[295] Renfrew, *The Emergence of Civilisation: The Cyclades and the Aegean in the Third Millenium B.C.*, p. 462.

[296] Ibid., pp. 429-434, 417.

[297] Dickinson, *The Aegean Bronze Age*, p. 73.

From the second millennium, we have evidence of an organised metal trade from the first bronze ingot bars, the so-called "oxhide" ingots which have been found widely in the Aegean among shipwrecks and beyond[298]. "This is the first direct indication of a regular trade in large quantities of a raw material", comments Renfrew, who suggests that the ingots were traded from Cyprus and possibly Sardinia to the Aegean world.

The Cyclades are rich in small metalliferous deposits and much progress has been made in establishing those used from an early date, both by direct identification and the dating of mines and slag heaps, and trough lead isotope analysis. A combination of these approaches has demonstrated that Siphnos produced silver, lead and some copper and gold[299] and that Kythnos was an important copper source[300].

Theophrastus, who succeeded Aristotle in Plato's Lyceum in Athens in fourth century BC remarks, that other useful minerals such as realgar, orpiment, chrysocolla and cyanus are found in silver mines[301]. He wrote two books on mines as Diogenes Laetrius (5, 44) informs us, which have not survived but the comments in *Des Lapidibus* (The Stones) indicate some familiarity with the subject. Theophrastus gives also a lot of information about pigments that were by-products of mining and were used in medicine and construction technology[302]. These substances were as equally important as the metals themselves in antiquity and we know that they were traded around the known world[303].

It is generally argued that the ancient economy was dominated by agriculture and rural production[304]. The work of Moses Finley[305] on the

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[298] Renfrew, *The Emergence of Civilisation: The Cyclades and the Aegean in the Third Millenium B.C.*, pp. 457-460, fig. 20.6.
[299] Z. A. Stos-Gale and C. F. Macdonald, "Sources of metals and trade in the Bronze Age Aegean," in *Bronze Age Trade in the Mediterranean*, ed. N. H. Gale, *Studies in Mediterranean Archaeology* (Jonsered: Paul Astroms Forlag, 1991), pp. 249-288.
[300] Z. A. Stos-Gale, "The role of Kythnos and other Cycladic islands in the origins of Early Minoan metallurgy," in *Kea-Kythnos: History and Archaeology - Kea-Kythnos: Istoria kai Archaiologia*, ed. A. Mazarakis, *Meletimata* (Athens: Recearch Center for Greek and Roman Antiquity - National Hellenic Recearch Foundation, 1998), pp. 717-735.
[301] Theophrastus, *De Lapidibus. Greek & English / edited with introduction, translation and commentary by D.E. Eichholz*, p. 51.
[302] Realgar is arsenic sulphide, a red pigment which on exposure is altered to orpiment, a yellow pigment and both were employed in medicine. (e.g. Celsus De medicina 5,22. 5).
[303] T. E. Rihll, "Making money in Classical Athens," in *Economies beyond Agriculture in the Classical World*, ed. John Salmon (London and New York: Routledge, 2001), p. 131.
[304] David J. Mattingly and John Salmon, eds., *Economies beyond agriculture in the Classical World*, vol. 9, *Leicester-Nottingham Studies in Ancient Society* (London and New York: Routledge, 2001) p. 3.

ancient economy is still very influential although statements like "there is minimal evidence for profit directed growth or for surplus orientated agricultural or industrial specialization" and "there was a notable lack of technological development" have been criticised by recent scholars, partly because of the explosion of new archaeological data. Finley's broad-brush approach has inevitably resulted in a degree of over-generalisation about the economy of the ancient world; some settlements may have turned into producer or commercial cities because the value of the goods produced or traded in or from the urban area was higher than the value of that its inhabitants could consume. Siphnian settlements must have been among these early trading communities since their mineral wealth could not have been consumed on the island.

Archaeometallurgy

Evidence of metalworking items strongly suggests development of this craftwork in northern Greece, well before the beginning of the Bronze Age. Small copper trinkets and implements have been recorded also in the Cyclades (Kea) and might have spread from northern Greece or western Anatolia. People in the Aegean probably acquired some basic knowledge from the end of the Neolithic age and developed gradually more expertise and specialised craftsmanship, which would include prospectors, miners and smiths[306].

Mining activity resumed towards the end of the nineteenth century but instead of silver and gold, it was iron that was exploited. During these workings -which ceased in the 20th century- many of the ancient galleries were encountered (and some destroyed) but neither gold nor silver mineralizations were traced. This complete lack of precious metal occurrence shed doubts on the ancient reports. In order to find the silver resources of Archaic silver coinage, a team of researchers from *Democritus Institute* at Athens and *Max Planck Institute* at Heidelberg visited potential sites in Greece, including Siphnos in 1975[307]. They visited Agios Sostis, where they

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[305] M. I. Finley, *The Ancient Economy* (London: Berkeley, 1985).
[306] Dickinson, *The Aegean Bronze Age*, p. 38.
[307] At the beginning of the 1970's about 120 ancient Greek silver coins were found in Asyut close to Cairo in Egypt, mainly from Aegina, Athens and Thasos and have been examined

were able to identify the ancient galleries among the abandoned modern remains. The archaeo-metallurgy project of Siphnos proved to be far more successful than had been expected and later, scholars from the Deutsches Bergbaumuseum Bochum, the University of Heidelberg and the University of Oxford joined the work team. The final results from the geological survey and the laboratory tests have confirmed the testimonies of Herodotus (Book III, 57), who describes Siphnians as the richest of the islanders because of their gold and silver mines[308].

At the peninsula of Agios Sostis, which geologically consists of marble, research has identified the ancient mining galleries and the mineralization of marble by "irregularly shaped ore bodies containing predominantly dark iron and manganese oxides probably formed by karst phenomena. A remarkable feature is a steeply dipping ore vein up to 1m wide crossing the peninsula in the northeast" (Figure 19)[309].

At the contact between the mineralization and the hanging marble wall, narrow shafts of irregular shape were sunk down. These shafts were interconnected by narrow galleries, some of them only 0.4m wide. At its deepest part, the ancient mine of Agios Sostis was flooded with sea-water confirming Pausanias' description. The ancient galleries extended to at least three metres below the present (2000) water level.

In the ancient mines of Agios Sostis, two different techniques can be recognised and combined with the archaeological evidence, as well as radiocarbon and thermo-luminescence dating, the earlier type is prehistoric (third millennium BC) and the later belongs into the Archaic/Classic period (middle of the first millennium BC). The earliest technique was characterised by irregular rounded galleries that followed the mineral deposits wherever they travelled from the surface, such that the galleries were driven by heavy stone boulders and fire setting. These mines that were dug into the hillside following the vein of ore were drift mines.

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by Max Planck Institute of Heidelberg in order to detect the origin of the silver. Yiannis Bassiakos and Yiannis Stauropodis, "Gold, Silver and ancient mines in the Aegean," *Deltion of the Greek Nuclear Power Committee* 2, no. 33 (1982): p. 3.

[308] Wagner and Weisgerber, "Silber, Blei und Gold auf Siphnos- Prahistorische und antike Metallproduktion." (Anschnitt, Beiheft 3, Bochum)

[309] Gunther A. Wagner, "Ancient Gold and Silver mines of Siphnos," in *Proceedings of the 1st International Sifnean Symposium*, ed. Tz. Zervoudakis (Athens: Society for Sifnean Studies, 2000), p. 148.

The second type of technique consists of more regularly shaped galleries which were mainly carved with hammers and chisels and which have left still visible marks on the walls and ceilings[310]. These Archaic/Classic period galleries do not always follow the vein but seem to be driven in a certain direction, tunnelled through the hard rock consisting of hard marble. The technique proved quite successful in detecting larger and more productive ore veins[311]. These exploratory shafts or galleries cut into barren rock to find new lodes underground are cross-drift mines[312]. Whether it was experience or intuition that has guided these prospectors, the fact is that they were quite successful. Agricola, a metallurgist and miner of the early sixteenth century AD, attempted to give an explanation by recommending that a mining prospector should know astronomy "...so that he can know the divisions of the heavens and from them judge the direction of the veins..."[313]. Forbes, the most informed historian of metallurgy in the 20th century, recognised that ancient shafts were dug "as a rule" to meet the underground crossing of two veins and he came to the conclusion that "the miners seem to have had a topographic method of planning the details on the underground working, since it would be impossible otherwise to understand why they made passages between two distant points and through barren rocks."[314]

The chief factors for determining the extent of a mine were the presence of ore and breathable air and the absence of water flooding the working face. Some shafts were dug and others refilled, solely to improve ventilation[315]. Such shafts, as has been mentioned above, would have required surveying at the surface and underground to ensure connection and the ability to handle such topographical challenges by the ancient Greeks in

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[310] Ibid., p. 149.
[311] This very valuable information has been confirmed by Dr. Y. Bassiakos member of the team that investigated the galleries.
[312] Conophagos, *Le Laurium Antique*. In this very detailed work on the mines of Laurion, also published in Greek, there are maps of the known galleries and shafts and an account of the techniques used in metallurgy of antiquity. Shafts can be more than 100 metres deep and they reach the deepest metalliferous contact unmistakably, cut with admirable perfection through the hard rock, see pp. 197- 206 (Greek edition)
[313] Agricola, *De Re Metallica. Translated from the first Latin edition of 1556, with biographical introduction, annotations and appendices upon the development of mining methods... from the earliest times to the 16th century*, Book 1, pp. 3-4.
[314] Robert James Forbes, *Studies in Ancient Technology*, 10 vols., vol. 8 (Leiden: E. J. Brill, 1964), p. 141.
[315] Conophagos, *Le Laurium Antique*, p. 118.

the sixth century BC is illustrated in the construction of Eupalinus' tunnel in Samos[316].

The examination of the oxidized ores in the galleries of Siphnos (e.g. argentiferous cerussite, malachite, chrysocolla, cupriferous iron-oxides etc) provided evidence that they were intensively mined in antiquity and that beyond any doubt they contained lead and silver minerals[317]. The ore was loaded and carried to the surface either from the entrance of the galleries or from the shafts that were chased as described above[318]. Usually at the mine ore was assessed and further reduced in size with stone hammers and anvils to pea-sized pieces and sent straight for smelting. The dressing operation took place before the smelting for ores to remove the obvious gangue[319]. The gangue was removed from the site and large quantities were generated. Some went into hydraulic cements and plasters used for cisterns, water channels and other wet areas and some into mud bricks. In Siphnos during the Bronze Age much was thrown down old shafts[320].

There is evidence from the chemical analysis of the slags (scoria) scattered around the mine of Agios Sostis that lead smelting was undertaken on the windy ridge of the peninsula. The presence of litharge, a dirty yellow by-product of silver processing that is a lead oxide, and is formed when silver-bearing lead is separated into silver and lead – a process known as cupellation – proves that silver was extracted from lead-bearing ores. This operation, like mining, has been documented as having been carried out from the third millennium BC and that makes the silver mine of Agios Sostis in Siphnos the earliest silver mine known in the world[321].

There are quite a few areas in Siphnos with lead-silver deposits as indicated in Figure 19. They form two separate and identified zones and geologically, they are similar. They consist of irregular ore bodies in

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[316] T. E. Rihll and J. V. Tucker, "Greek engineering: the case of Eupalinos' tunnel," in *The Greek World*, ed. A. Powell (London: Routledge, 1994), pp. 403-431. The details of the topographical methods the ancient Hellenes used for this project have not been identified and fully unterstood yet.

[317] G. A. Wagner and G. Weigerberg, "The ancient silver mine at Agios Sostis on Siphnos (Greece)," *Archaeophysica*, no. 10 (1979).

[318] We have also an ancient account by Agatharcides, see in Forbes, *Studies in Ancient Technology*, pp. 143-145.

[319] Conophagos, *Le Laurium Antique*, p. 343.

[320] Rihll, "Making money in Classical Athens," pp. 121-142.

[321] Bassiakos, "Chronologiseis me ESR se archaio metalleio tis Siphnou (ESR Dating on Calcites from an ancient mine of the island of Siphnos)," pp. 169-179.

carbonate host rock and they follow a north-east to south-west direction[322]. Evidence of ancient workings from both the early Cycladic and the Archaic/Classic period are widespread in all these deposits and dating is confirmed by the potsherds found at the surface area around the mines.

Although the ancient lead and silver mines were largely destroyed by modern iron exploitation, their remains are still very impressive. They imply that Siphnos must have been a substantial source of lead, gold and especially silver in antiquity. It is also remarkable that the ancients exhausted all of these deposits since only minor traces of the silver ores are left[323].

Discussion

From the above analysis, some general conclusions about Siphnos in antiquity can be drawn and also some more specific observations about its cultural context can be made.

It is evident that the geographical position of Siphnos in the centre of the Aegean shaped its cultural, political and economic destiny. Siphnos was placed at the crossroads of Eastern and Greek civilisations, geographically and culturally. But Siphnos was not just another trading centre or a stop-over harbour. The mineral wealth of the island was explored earlier than any other place in Greece and this indicates that any technological advances were either invented here or adapted very quickly from wherever they had originated. Technological innovations transcend cultural boundaries but especially in antiquity, any technological issue would have been accompanied by religious and cosmological concepts that would have travelled, penetrating any cultural filters and affecting the people involved.

The Siphnians considered themselves to be Ionians as the literary, linguistic and archaeological evidence indicates. They had close relations with the other Ionian cities but it was the Athenians who had the most decisive role in their political affairs and the greatest impact on their culture. The investigation on the religious pantheon and the rituals performed on Siphnos can be supplemented by information given in ancient literature and archaeological evidence about Athens' festivals.

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[322] Bassiakos and Stauropodis, "Gold, Silver and ancient mines in the Aegean."
[323] Wagner and Weisgerber, "Silber, Blei und Gold auf Siphnos- Prahistorische und antike Metallproduktion."

The "richest of the islanders" were distributing the wealth from the mines equally to all citizens. The preferred way for Siphnians to spend this wealth was by producing magnificent and elaborate architecture, as the Siphnian treasury in Delphi and the marble public buildings on the Acropolis of Siphnos demonstrate. Extravagance was their favourite way of exhibiting their prosperity and that was probably the main reason they suffered such a humiliation, even from their allies, when their resources were impoverished.

Herodotus' account gives another dimension to the erection of the treasury, describing the action as *επίδειξις ευδαιμονίας και ευσέβεια*, a display of wealth and religious piety. This indicates Siphnians' concern about the stability of their wealth and the specifically religious character of that concern. It can be assumed that they already had signs of decline in their production and sought a consultation with the oracle to suggest a way to regenerate their resources.

CHAPTER 4

Social and religious concepts on metals, mining and miners during the archaic and classical period in Greece

Analysis of the concepts about metallurgy in ancient Greece involves religious and philosophical ideas about the generation of metals and the social and religious status of the persons employed in the various metallurgical stages, focusing on the miners - where that kind of distinction is possible. The evidence, specifically about Siphnos, is scarce and to supplement it, evidence derived from other metallurgical areas in Greece and the Near East will be employed. It has been demonstrated that ideas and techniques on metallurgy were transferred and adapted, crossing cultural and ethnic boundaries[324], a phenomenon that has never ceased to exist concerning technology. Historical evidence has been complemented by the results of anthropological research which had confirmed the similarity of concepts, beliefs and ideas concerning metals and metallurgists among different cultures and races[325].

General historical scheme

Metals and metallurgy have been probably the most innovative and revolutionary discovery of man and have determined the evolution of human civilization up to the present day. The discovery of metals has altered the entire mode of man's existence[326]. It is widely accepted from archaeological evidence that metallurgy originated in the Near East and Mesopotamia and it is estimated that it began as early as the sixth millennium BC[327]. The development of accurate laboratorial methods of dating metallurgical objects

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[324]Referring to ideas in the metallurgical field "Racial, cultural or geographical differences were often not strong enough to interrupt the spread of such notions" in Snodgrass, *The Dark Age of Greece*, p. 321.

[325] The most important work on metallurgical concepts remains the seminal work of Mircea Eliade, *The Forge and the Crucible*, trans. Stephen Corrin, second ed. (Chicago and London: University of Chicago Press, 1962).

[326] Ibid., p. 57.

[327] On ancient metallurgy the most comprehensive study remains Robert James Forbes, *Studies in Ancient Technology*, 2nd ed., 10 vols. (Leiden: E. J. Brill, 1963-1972). Especially volumes 1,7,8, and 9. The most recent work is Paul T. Craddock, *Early Metal Mining and Production* (Edinburgh: Edinburgh University Press, 1995).

that could be applied to artefacts and by-products of metallurgical workings which archaeology has revealed from antiquity, has shown that in quite a few places in Europe, "copper-working was practised at a date which compares with the earliest cultures of the Near East"[328]. The Cyclades and Siphnos in particular, are among these early metallurgical sites that were producing and working silver and lead, according to archaeological evidence.

During the Bronze Age, metals like copper and silver were so essential to the welfare of the societies and peoples then, that they can only be compared to the role of steel in the 20th century[329]. Demand for metals accelerated technological development and this progress has been associated with "social-economic development from bands through to tribes, chiefdoms and states"[330].

It has been argued that the beginning of silver and lead production in the Aegean was centred in the Cyclades[331]. Lead isotope analysis has shown that the earliest Cycladic silver and lead artefacts were made from Siphnian ores. In Siphnos we have direct evidence (C-14 and thermo-luminescence analysis) that silver was already being mined at the beginning of the third millennium (2980 BC) and the first phase of the systematic exploitation of the ores lasted at least until the Dark Ages (eleventh century BC) while the second phase has been dated to the archaic age (early sixth century)[332]. The sixth century was the acme of production, which began to decline at the beginning of the fifth, only to experience a short recovery at the end of the fifth century and finally to be abandoned (at least on an industrial scale) when the mineral resources were exhausted and the mining galleries were flooded by the sea, sometime in the fourth century BC.

It has been demonstrated in the historical analysis in Chapter 3, that metals were recognised in antiquity as being of prominent importance and they were the reason for the Greek expansion through colonization which

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[328] R. F Tylecote, *The early history of metallurgy in Europe* (London and New York: Longman, 1987), p. 3.
[329] N. H. Gale, "The role of Kea in metal production and trade in the Late Bronze Age," in *Kea-Kythnos: History and Archaeology - Kea-Kythnos: Istoria kai Archaiologia*, ed. A. Mazarakis, *Meletimata* (Athens: Recearch Center for Greek and Roman Antiquity - National Hellenic Recearch Foundation, 1998), p. 737.
[330] Tylecote, *The early history of metallurgy in Europe*, p. 3.
[331] Gale, "The role of Kea in metal production and trade in the Late Bronze Age," p. 751.
[332] N. H. Gale and Z. A. Stos-Gale, "Cycladic lead and silver metallurgy," *Annual of the British School in Athens* 71 (1981). p.169-224 and Bassiakos, "Chronologiseis me ESR se archaio metalleio tis Siphnou (ESR Dating on Calcites from an ancient mine of the island of Siphnos)," pp. 167-179.

took place from the eighth century BC and resulted in the so called "Greek miracle"[333] of the classical period. The Athenian hegemony in the fifth century largely depended on the silver mines of Laurion providing the resources for Athens to become the strongest naval power in Greece[334].

Prehistoric period up to Iron Age

The importance of metals combined with the advanced knowledge required for the prospecting of the metalliferous veins, an enterprise followed by the extraction of the ores and the highly sophisticated melting procedure needed in order to obtain the metal, has been attributed to the earth and people with magical powers. Childe[335] has called this discovery of the transmutation of the blue, green, red or grey ores to tough red metal (copper) one of the most dramatic leaps in history[336].

In prehistoric times, metals like iron were first known from the meteorites (stones falling from the sky) and others were found naturally in a pure state on the surface of earth and were called "natives". The technique of mining was applied later when people understood more about the reduction of ores and when the "native" metals, the ones found naturally scattered on the surface of earth, were exhausted. It is most probable that the discovery of ores that contained metals and which were placed in veins that ran into the bowels of the earth was made after lightning had fallen on surface veins; the subsequent fire caused by the immense capacity of the thunderbolt melted the ore and revealed the metal. This was a breakthrough in human technological evolution but at that time, and for many years after, it was perceived as a sign from god, an epiphany connected with the divine power of the Sky-god and the magical properties of Earth, the Great Goddess and mother of all[337].

The name given by the Greeks to a thunderbolt is *αστροπελέκι* (star-axe) indicating the power of Zeus and the sacred Minoan axe devoted to the

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[333] The bibliography on this subject is massive. The most recent basic book on the rise of classical Greece is: Osborne, *Greece in the Making 1200-479 B.C.*

[334] W. G. Runciman, "Doomed to Extinction: The Polis as an Evolutionary Dead-End," in *The Greek City: From Homer to Alexander*, ed. Simon Price (Oxford: Clarendon Press, 1990), p. 360.

[335] In Gordon V. Childe, *The dawn of European civilization*, 6th rev. and reset ed., *The history of civilization* (St. Albans: Paladin, 1957).

[336] Forbes, *Metallurgy in Antiquity: a notebook for archaeologists and technologists*, p. 29.

[337] Eliade, *The Forge and the Crucible*. Chapter 1, Meteorites and Metallurgy, p.19 ff.

Great Goddess[338]. Thunder was "the signal for the heaven and earth hierogamy"[339] and the thunder bolt was perceived as the vehicle for the fertilisation of mother–earth[340].

The ancients believed that ores, like all stones, carried with them the power of the element they came from; thus they had the regenerative powers of the earth. They also recognised that fire was responsible for bringing forth the metal in the womb of the earth. These were the main reasons that "both mining and metallurgy have always had strong religious traits until very recently"[341].

The sacred aura that the metals and their extraction were accorded is the main reason that, as has been demonstrated by anthropological research of various diverse ethnological groups, within several otherwise different cultures, there is "a close connection between the art of the smith, the occult sciences (shamanism, magic, healing, etc.) and the art of song, dance and poetry"[342]. The above creative expressions have been handed down as very complex rituals, comprising initiations, specific ceremonial acts, and craft secrets, strongly linked with various underlying conceptions about the world. Among the different cultural levels, "one element nevertheless is constant – that is the sacredness of the metal and consequently the ambivalent, eccentric and mysterious character of all mining and metallurgical operations"[343].

In the Iron Age, the prevalent cosmological conceptions recognised a kind of homology between man and the world that are evident in the myths and artefacts that have survived[344]. These conceptions sexualised the vegetable and mineral world; the metals were recognised as "male" or "female"[345] and the mining galleries were compared to the uterus of the

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[338] Arthur J. Evans, *The Mycenaean Tree and the Pillar Cult and its Mediterranean Relations* (London: MacMillan and Co, 1901), p. 10. According to Evans the double axe "stands as an image for the conjuction of the divine pair". As it is demonstrated this divine pair has been identified later with Ariadne and Dionysos in certain places.
[339] Eliade, *The Forge and the Crucible*, p. 30.
[340] Martin P. Nilsson, *The Minoan-Mycenaean Religion and its survival in Greek religion*, 2nd rev. ed., vol. 9, *Series: Skrifter utgivna av. Kungliga Humanistiska vetenskapssamfundet i Lund* (Lund: C. W. K. Gleerup, 1950), p. 220.
[341] Forbes, *Studies in Ancient Technology*, p. 76.
[342] Eliade, *The Forge and the Crucible*, p. 99.
[343] Ibid., p. 100.
[344] Ibid., pp. 27-33.
[345] Theophrastus (371-300 BC) in his essay *On the Stones* gives a rational explanation according to their qualities (hard or soft quality, colour, etc) but in earlier times the distinction

mother earth while the ores coming from the bowels of earth were conceived as "embryos"[346].

The ancient Greeks believed that the earth was "riddled with caverns and channels" where water was flowing underground[347]. The caves and caverns were compared to the womb or matrix of mother earth and they attest, from prehistoric times, to a significant ritualistic role (Nymphs, Sibyls etc)[348]. The red earth, that Pliny confirms it led to iron ores[349], is conceived as the blood of the Great Goddess and is intimately connected with the cult of the caves. This is the reason why the rituals associated with mining and metallurgy, have an obstetric and gynaecological significance which is emphasised by an analogous terminology[350]. The galleries of the mines are compared to the vagina of mother-earth, they bear the same symbolism with the caves and are closely connected with the labyrinth, another symbol of the path for the penetration into the body of earth[351], a symbol usually found in proximity to prehistoric mines[352].

Similar sexual symbolism is also found in the ritual[353] procedures concerning the generation of fire, thus reproducing the birth of the world[354]. Lightning and fire are conceived of as the necessary cataclysmic events that precede creation, "the catastrophe followed by a paradoxical regeneration"[355].

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had most probably a magical meaning. See in Forbes, *Metallurgy in Antiquity: a notebook for archaeologists and technologists*, p. 48.

[346] Eliade, *The Forge and the Crucible*, p. 33.

[347] Forbes, *Studies in Ancient Technology*, vol. VII, p. 16.

[348] This ritualistic role can be interpreted as a mystic return to the mother Eliade, *The Forge and the Crucible*, p. 14.

[349] Pliny the Elder, Natural History, 33.98 and Ibid., p. 41.

[350] In Egyptian the word *bi* means "uterus" and "gallery of a mine". It is worth mentioning that in prehistoric times, the caves and caverns were compared to the matrix of the Earth and the Greek word *delph* meaning "uterus" has been used for naming the most sacred sanctuary in Greece, Delphi. See in Ibid.. The beliefs about anthropomorphising Earth survived in European metallurgical terminology. See Eliade, *The Forge and the Crucible*, p. 38.

[351] Mircea Eliade, "La Terre-Mere et les Hierogamies Cosmiques," *Eranos-Jahrbuch* XXII (1953): p. 75.

[352] Hermann Kern, *Through the Labyrinth: designs and meanings over 5000 years* (Munich, London: Prestel, 2000), p. 67.

[353] The structure of a ritual has a divine model, an archetype. In this particular ritual of generation it is a re-enactment of "what the gods did in the beginning" Through the paradox of a rite every consecrated space coincides with the centre of the world and the time of the ritual coincides with the time of the "beginning".Mircea Eliade, *The Myth of the Eternal Return or, Cosmos and History*, trans. Willard R. Trask, 2nd ed., *Bollingen Series* (Princeton N.J.: Princeton University Press, 1965), pp. 20-21.

[354] Eliade, *The Forge and the Crucible*, p. 40.

[355] Eliade, *The Myth of the Eternal Return or, Cosmos and History*, p. 121.

The fecundity of Earth presupposes a procreative act, known as the "sacred marriage", the scenery of which is described in ancient literature very vividly as in Virgil's *Aeneid* (IV, 156-166): "the storm breaks out; while the nymphs shout on the heights of the mountain, the thunder thunders and the lightnings burst – sign that the celestial God approaches the Mother-Earth."[356]

The metals were conceived of as foetuses that were detached violently from the womb of Earth before their gestation period had been concluded[357]. This human intervention was considered sacrilegious because it "interfered with the harmonious growth of the metals in earth"[358] and appropriate purification rites were performed to protect the miners (smiths) from divine punishment. Those who penetrate into "the geological strata of life" are confronted with "a sacred presence" which must be propitiated[359]. A text from the library of Assurbanipal verifies that these beliefs were very strong in Mesopotamia[360].

The metallurgical furnace where the smelting took place was a second matrix for the embryos (the ores) where their gestation would be completed - the "maturation" of the metal – and that was the second birth of the metal with the intervention of man as the master of fire who could perform transmutation and "in constructing or creating, imitated the work of the demiurge"[361].

This is mainly the reason for the status of the smith[362] in all prehistoric cultures who is "either honoured or despised but always held in awe"[363]. Among nomadic and pastoral peoples the smith was an outcast and was

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[356] Eliade, "La Terre-Mere et les Hierogamies Cosmiques," p. 75.
[357] Eliade, *The Forge and the Crucible*, p. 42.
[358] Forbes, *Studies in Ancient Technology*, p. 76.
[359] Eliade, *The Forge and the Crucible*, p. 57.
[360] Ibid., pp. 72-74.
[361] Ibid., pp. 74-76.
[362] The name smith is mostly used in English literature without distinction between the person extracting the metal and the person working with it. In the prehistoric times, prospecting, extracting, smelting and casting would be undertaken by the same man so there would be no need for using a different name for each job or having different cultural and social approach to each craftsman. The Greeks used the term μεταλλεύς, μεταλλευτής and μεταλλουργός (metallurgist) for the miner and μέταλλον for the mine. A detailed study on terminology in Chapter 1 in Robert Halleux, *La probleme des metaux dans la science antique*, vol. Fascicule CCIX, *Bibliotheque de la Faculte de Philosophie et Lettres de l' Universite de Liege* (Liege: 1974), pp. 22-25. The surviving ancient texts on mining are very scarce and not written by specialists so it is doubtful whether there was any real difference in the use of the terms. The same confusion or mixing-up is still found in almost all bibliography even when written by specialists on the subject.
[363] Forbes, *Studies in Ancient Technology*, p. 69.

constrained to having to live at a distance from the main settlement. On the contrary in agricultural societies, he is honoured as "an expert who is often an important trader and go-between, often chief, village-head or councillor of kings, often priest or even a prince of blood"[364]. A specific social order in mining communities is also indicated from the findings, like ritual badges of rank that have been found in prehistoric Celtic settlements in Europe[365].

The discovery of reduction and casting has been correlated with the recognition of metallurgy as the earliest craft in history that became a full-time job and the acclaim of the smith as the earliest craftsman[366]. This presupposes a kind of organised society or tribe but most importantly it has accelerated social evolution towards urban patterns such that they could accommodate the required distribution of labour. The earliest clans of smiths, due to the intricacy of their craft, were "honoured as free men and feared as the master magicians of a new craft gradually acquiring that peculiar religious and social state [...] in later ages"[367].

In many cultures, the guild of smiths was originally a clan or a genealogical group[368] like the legendary *Telchines*[369] that were born from the blood of Ouranos, probably originated from Phrygia[370] and have been ascribed to being the mythological founders of the first cities in the island of Rhodes[371]. Their name, according to Graves, derives from the word *Τυρρήν* or *Τυρσήν* which signifies the Tyrrhenian ship. It probably indicates the belief, unambiguously displayed in the Greek myth of Kadmos[372] who is one of the Kabeiroi, the mysterious metallurgical divinities supposed to be of Phoenician origin and who, according to the legend, is responsible for introducing mining

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[364] Ibid.
[365] In this study on the Celtic culture it is also stated that "it is more likely that there were specific mine gods and cults devoted to them of which we are wholly ignorant" in Helmut Birkhan, *Kelten : Bilder ihrer Kultur. Celts : images of their culture*, Deutsche-englische Ausg. English-German ed. ed. (Wien: Verlag der Osterreichischen Akademie der Wisenschaften, 1999), p. 102.
[366] Helmut Otto and Wilhelm Witter, *Handbuch der altesten vorgeschichtlichen Metallurgie in Mitteleuropa* (Leipzig: J.A. Barth, 1952).
[367] Forbes, *Metallurgy in Antiquity: a notebook for archaeologists and technologists*, pp. 29-30.
[368] Forbes, *Studies in Ancient Technology*, pp. 70, 76.
[369] The most interesting and complete essay on the subject is L. de Launay, "Les Telchines et les origines legendaires de la metallurgie antique," *Revue Generalle des Sciences* (1908): pp. 449-455.
[370] Forbes, *Studies in Ancient Technology*, p. 79.
[371] Robert Graves, *The Greek Myths*, rev. ed. (London: Penguin, 1992), 60 d.
[372] An extensive bibliography and references about the introduction of metallurgy in Greece by Kadmos in Partington, *Origins and Development of Applied Chemistry*, pp. 438-439.

and metallurgy into Greece from Phoenicia and more specifically, from the Phoenician capital city of Tyre (*Τύρος* in Greek)[373]. Kadmos is also the mythical initiator of the worship of Dionysos in Thebes and Greece. According to Herodotus, the Phoenicians exploited the mineral deposits (gold and silver mines) on Thasos in Thrace and in other areas of Greece like those on Pangaios in Macedonia[374] and Kadmos, according to the legend, was the first to work there[375].

The *Telchines* in Crete are also identified as the Idean *Couretes* or *Dactyloi*, the shield-carrying youths that prevented the cries of the infant Zeus from being heard by his father Cronus and who remained his attendants thus recognising Zeus as the *Great Kouros*; they were also the ones that accompanied Dionysos on his mysterious journey to India[376]. The *Kouretes*[377] also accompanied the child Dionysos in Phrygia, according to the myth[378] and their worship is considered to be identical with the rituals performed for Dionysos by his *thiasus*. It is worth pointing out that all the clans of mythological metallurgists were also connected with thunderstorms and fire and they were capable of enacting or affecting the associated physical phenomena[379]. These metallurgical mythical clans were very popular in Thrace and the Kabeirian mysteries[380], which were also connected with orgiastic rites, and were very popular among the Thracian tribes. It is well known that they were keen smiths (miners mainly) since the most prosperous gold mineral deposits in Ancient Greece were the ones on the Pangaion mountain in Thrace and also the ones in Thasos[381].

The archaeological evidence from Greece suggests that the most ancient divinity connected with the metallurgical workings is the *Potnia*

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[373] Graves, *The Greek Myths*, 54. 1. About Kadmos in 58 passim 59 passim and 132. o. These beliefs are considered to be historically incorrect and it is more probable that they merely developed mining and metallurgical processes already used by native inhabitants and industrialised the scale of mining. In Partington, *Origins and Development of Applied Chemistry*, p. 438.

[374] Herodotos, *Histories*, book VI, 46 f.

[375] Partington, *Origins and Development of Applied Chemistry*, p. 439.

[376] Launay, "Les Telchines et les origines legendaires de la metallurgie antique," p. 451.

[377] The most complete study on Couretes even though slightly outdated in Henri Jeanmaire, *Couroi et couretes : essai sur l'education spartiate et sur les rites d'adolescence dans l'antiquite hellenique* (Lille: Bibliotheque universitaire, 1939).

[378] Forbes, *Studies in Ancient Technology*, p. 80.

[379] Jane Ellen Harrison, *Themis : a Study of the Social Origins of Greek Religion* (London: Cambridge University Press, 1912). Chapter III, p. 51 ff.

[380] Karl Kerenyi, "Mysterien der Kabiren," *Eranos-Jahrbuch* XI (1944): pp. 11-60.

[381] Partington, *Origins and Development of Applied Chemistry*, p. 439.

Theron, the goddess of wild animals and the mountains. Depictions of the goddess have been found in a cave in Crete where there was also a metallurgical workshop in Minoan-Mycenaean times. The name *Potnia* is also attested to connection with the groups of metallurgists in the Linear B tablets that have been found in Pylos and Knossos[382]. The metallurgists are referred to as bronze-smiths in Linear B tablets, which was the name used even in archaic and classical period (χαλκεύς) to describe the iron-smiths and the gold smiths and in general the metallurgists, as attested to by ancient texts[383].

Archaic and classical period

Techniques

Very few ancient texts and referring to mining methods have survived. The little information given is by Greek philosophers, historians or geographers like *Aristotle, Herodotus, Strabo, Agatharchides*[384] and *Diodorus Siculus* and by the Roman *Pliny the Elder*[385] who were not experts nor did they have an immediate knowledge of mining. The most informed texts that survive are an essay by Theophrastus, known as *De Lapidibus* or *On the Stones*[386]. Valuable evidence on the ancient classical and pre-classical methods and concepts in mining is given by the Renaissance textbooks published in the early sixteenth century. The most inclusive and coherent is written by

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[382] John Chatwick, *The Mycenaean World*, 2001 paperback ed. (Cambridge: Cambridge University Press, 1976).

[383] Homer, Odys. c, 432; i, 391-393 where the goldsmith and the iron smith are named as χαλκεύς. For more ancient references in Anastasios K. Orlandos, *Ta ulika domis ton Archaion Ellinon (Construction materials of Ancient Greeks)*, 2 vols., vol. 2, *Bibliothiki tis en Athinais Archaiologikis Etaireias n.27* (Athens: 1960), p. 5.

[384] Agatharchides gives an account of an expedition to the mines of Sinai under Pharaoh Amemhemet III, (XII dynasty) and "paints the picture of the labour in the mines in gloomy colours". For the whole account with comments in Partington, *Origins and Development of Applied Chemistry*, pp. 35-36.

[385] Kenneth C. Bailey, *The Elder Pliny's Chapters on Chemical Subjects*, 2 vols., vol. Part II (London: Edward Arnold & Co, 1932).

[386] Theophrastus, *Theophrastou tou eresiou peri ton lithon biblion. Theophrastus's history of stones. With an English version, and notes, including the modern history of the gems described by that author; ... To which are added, two letters: I. On the colours of the sapphire and turquoise. II. Upon the effects of different menstruums on copper. ... The second edition; enlarged by the addition of a Greek index ... Also observations on the new Swedish acid, ... and with an idea of a natural and artificial method of fossils. By Sir John Hill* (London: printed for the author, in St. James's-Street: and sold by L. Davis; Nourse; White; Cater; Bell; Fletcher, at Oxford; Woodyer, at Cambridge; and Bell, at Edinburgh, 1774). For comments on the original text in a more recent edition see in William W. Fortenbaugh, Pamela M. Huby, and Anthony A. Long, eds., *Theophrastus of Eresus : on his life and work*, 2 vols., vol. 1, *Rutgers University studies in classical humanities* (New Brunswick, N.J.: Transaction Books, 1985).

Agricola *De re Metallica*[387] and "thus we are able to supplement the ancient texts and to get at least an idea of ancient mining"[388].

The most significant innovation in archaic times is that the miners were able to determine the direction of the veins – according to Agricola, by using astronomy which enabled the miner to associate the direction of the veins with "the divisions of the heavens"[389]. Instead of fusing the veins with fire and simply following their path as practised in prehistoric times, the archaic and classical period miners would cut the galleries perpendicular to their direction, aiming to reach the richest part of the metalliferous veins in order to achieve maximum gain with the least possible effort, as we know from archaeological evidence[390]. In order to carry the ores away and acquire better ventilation for the mining galleries, the ancient Greeks were able to construct perpendicular shafts from the earth's surface down to the galleries through solid rock that were usually about 60-80 metres deep and in Laurion, could be as deep as 120 metres[391]. As has been already mentioned, these quite impressive structures could not have been executed as accurately without using a surface topographical method in order to be able to know the exact position and direction of the underground galleries[392]. This technique has been used also with success in the mining galleries of Siphnos[393].

Conceptions, myths

Two groups of myths have been identified in the discipline of comparative religion connected with the relationship between the divine smith and God[394]. In Greek mythology both exist, the first recognising the First Smith as the Civilizing Hero, who also provided fire to humans, in the myth of Prometheus, while the second group is connected with the struggle over the sovereignty of

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[387] Agricola, *De Re Metallica. Translated from the first Latin edition of 1556, with biographical introduction, annotations and appendices upon the development of mining methods... from the earliest times to the 16th century.*

[388] Forbes, *Metallurgy in Antiquity: a notebook for archaeologists and technologists*, p. 41.

[389] "There are many arts a miner must know[...] Philosophy, Medicine, Astronomy [...] that he may know the divisions of the heavens and from them judge the direction of the veins..." in Agricola, *De Re Metallica. Translated from the first Latin edition of 1556, with biographical introduction, annotations and appendices upon the development of mining methods... from the earliest times to the 16th century.* Book I, pp. 3, 4.

[390] Wagner and Weisgerber, "Silber, Blei und Gold auf Siphnos- Prahistorische und antike Metallproduktion."

[391] Conophagos, *Le Laurium Antique*, pp. 167,197-206 (Greek Edition).

[392] Forbes, *Studies in Ancient Technology*, p. 141.

[393] Bassiakos, "Chronologiseis me ESR se archaio metalleio tis Siphnou (ESR Dating on Calcites from an ancient mine of the island of Siphnos)," pp. 167-179.

[394] Eliade, *The Forge and the Crucible*, p. 97.

the world, where the smith-god provides the Hurricane God with the powerful weapons to give him victory; Hephaestus forges the thunderbolt for Zeus to win the Titans.

One of the heroes who according to Greek mythology introduced metallurgy, is Daedalus, the son of Alkippe or Merope[395] (the ancient name of Siphnos) while his father was a member of the Athenian royal house of Erechtheus[396]. Daedalus is also the famous architect who designed the labyrinth which was (according to Homer) a dancing floor on which was performed the spring dance that was also the limping dance of partridge, later known as the labyrinth or Trojan dance[397]. This dance was, according to Graves, the dance that was performed during the orgiastic rites relevant to the mysteries, or initiation rituals of the metallurgical craft[398].

The myth of the metals written down initially by Hesiod (*Works and Days* 109-201)[399] in the seventh century BC and repeated by Plato (*Republic* 414b)[400] seems also to have been of great antiquity and reflects the connection between the development of metallurgical knowledge and the process of self-awareness for mankind[401].

The name *demiurge* is employed by Plato in *Timaeus*[402] to designate a god who introduces and enforces order over disorder and chaos. The word means "the one who works for the people" (demos and ergo) and was used in Ancient Greece generally for craftsmen and mainly for smiths[403]. In spite of

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[395] Graves, *The Greek Myths*, 92. a.

[396] Apollodorus, *Apollodorus, The Library, with an English Translation by Sir James George Frazer*, 2 vols. (Cambridge, MA, London: Harvard University Press, William Heinemann Ltd., 1921). Vol. 2, p. 122, book 3. 15,8

[397] There is extensive bibliography on this subject which is presented below in the religious section about Ariadne, the consort of Dionysos, while the subject of the labyrinth is also connected with the theme of the "sacred marriage". On the Trojan dance the most recent information is in Kern, *Through the Labyrinth: designs and meanings over 5000 years*, pp. 30-33 and mainly pp. 77-83.

[398] Graves, *The Greek Myths*, 23. 1.

[399] Hesiod, *The Homeric Hymns and Homerica. Works and Days.*

[400] Plato, *The Republic of Plato / translated with introduction and notes by Francis Macdonald Cornford*, trans. F. M. Cornford, *The legal classics library* (New York: Legal Classics Library, 1991).

[401] Vernant, *Myth and Thought among the Greeks*, pp. 10 ff.

[402] Plato, Timaeus, 29a3.

[403] On the meaning and use of the word *demiurge* by Plato, the author has consulted the excellent study on *Timaeus* in Greek by Vasilis Kalfas, *Platon. Timaeus*, 2nd ed. (Athens: Polis, 1997), pp. 65-105. A more specialised study on *demiurge* is in French by Luc Brisson, *Le meme et l'autre dans la structure ontologique du Timee de Platon : un commentaire systematique du Timee de Platon.*, vol. 23, *Publications de l'Universite de Paris X: Nanterre. Lettres et sciences humaines* (Paris: Klincksieck, 1974), pp. 35 ff. In English see in Gregory Vlastos, *Plato's Universe*, *Jessie and John Danz lectures* (London: Clarendon Press, 1975), p. 26.

the fact that Plato does not consider smiths as having any political status and places them, in the prologue of his book, (*Timaeus* 24a, b) next to the shepherds, the hunters and the farmers, he probably recognised their sacred role in Athenian society, thus revealing a recollection from the distant past when the demiurgical capabilities of workman had resulted in the apotheosis of the *homo faber*[404]. It has also been argued that the metaphors used in Plato's work *Timaeus* (like demiurge for God) are intended to remind and emphasise the analogy (-ies) between the microcosm and the macrocosm[405].

The prehistoric beliefs about the fecundity and gestation of the mines as homologous to the uterus of mother-earth are still persistent in the archaic period[406]. Mineral substances are considered to be "vivent", alive, and they are subject to growth like plants and animals[407]. Metals are born in the bowels of earth where they develop their own sexuality[408]. In the thought of Thales the Milesian, the natural philosopher who lived around the turn of the seventh century BC, there is no distinction between organic and inorganic and the mineral world is alive[409].

According to more recent etymology of the word *μέταλλος* (based on Hesychius' Lexicon) it means the "*intermédiaire*", "*entremis*" the intermediate, the intervention and according to Hesychius even the matchmaker, or the sea engulfed between two lands[410].

The term employed by Homer in the *Iliad*[411] to describe places with metal deposits is *γενέθλιον,* meaning "the birth-place", and the use of this

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[404] Eliade, *The Forge and the Crucible*, p. 101.

[405] As it has been shown in a superb analysis in A. M. J. (Andre´ Marie Jean) Festugiere, *La revelation d'Herme`s Trismegiste*, 3 vols., vol. 2, Le dieu cosmique (Paris: Lecoffre, 1949), pp. 75-91.

[406] An excellent and coherent study in Robert Halleux, "Fecondite des mines et sexualite des pierres dans l' antiquite Greco-Romaine," *Revue Belge de Philologie et d'Histoire* 49 (1970): pp. 16-25.

[407] A fragment from Origenes (De principiis) is of interest on this subject given in French by Halleux: «Ont en eux-mêmes la cause du mouvement les animaux, les plantes et, d'une manière générale, les êtres qui sont constitues de corps et d'âme, parmi lesquels, dit-on, il y a aussi les minerais.» Ibid.: p. 25, n. 1. p. 25, note 1

[408] This notion has survived through the Middle-Ages up to at least the 13th century as shown in A. Daubree, "La generation des mineraux metalliques dans la pratique des mineurs du Moyen Age, d' apres le Bergbuchlein," *Journal des Savants* (1890): pp. 379-392 and 441-452.

[409] Halleux, *La probleme des metaux dans la science antique*, p. 66.

[410] Ibid. pp. 32-33.

[411] Homer, *Iliad,* book II. 856-857 "...όθεν αργύρου εστί γενέθλη"

particular term is constant in all other ancient authors[412] and indicates the ancient beliefs about the generation of the metals[413].

The belief that metals could generate had reinforced the notion that the mines could be regenerated after a period of abandonment (jachère in French) similar to having fields lie fallow in agriculture[414]. This was reported by Pliny the Elder (XXXIV, 165) who testified that the silver mines of Spain, among others, were regenerated and new deposits of ores were found after a period of abandonment and the notion has survived up to the eighteenth century AD and was accepted as a valid scientific theory[415].

These beliefs and ideas, which must have been expressed also in religious rituals and customs, were questioned in the Greek world after the sixth century BC with the introduction of the philosophical enquiry[416]. The first Ionian thinkers attempted to explain the origin of the universe and its component parts by forming "notional models" and creating cosmological theories in place of the cosmological myths. The rational way of explaining the phenomena reached a higher level with Plato and Aristotle after him – fourth century BC - who is recognised as the founder of scientific thought, being also the first to use the word *επιστήμη* (science). Their inquiries often refer to existing perceptions or previous philosophical and cosmological theories and this is evident in many cases, especially when they are not further analysing certain issues, obviously presuming that they are recognised as being already known and accepted. The concept of the generation of mineral substances, including metals, was one of these known and accepted issues.

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[412] Dionysios the Periegetes uses the same term for the Cassiterides islands (British islands) as the birth-place of *cassiterus* (tin) in his *Description of the world*, 563. The ancient authors like Theophrastos often use the word γίγνεσθαι –to become- which corresponds to γενέθλη. Theophrastus, *De Lapidibus. Greek & English / edited with introduction, translation and commentary by D.E. Eichholz*, p. 25.

[413] As demonstrated in Halleux, "Fecondite des mines et sexualite des pierres dans l' antiquite Greco-Romaine," pp. 16-18. It is characteristic that for the native metal the Greek term is *αυτοφυής* meaning "self-sown".

[414] Ibid.: p. 20.

[415] Frank Dawson Adams, *The Birth and Development of the Geological Sciences* (London: Bailliere , Tindall and Cox, 1938), pp. 77-136 and 289-296.

[416] John Healy, *Mining and Metallurgy in the Greek and Roman World*, ed. H.H. Scullard, *Aspects of Greek and Roman Life* (London: Thames and Hudson, 1978). Introduction pp. 15-19.

Metallogenesis – the generation or vegetation of metals

The most comprehensive attempt to explain the natural phenomena by identifying the ultimate process, the single reason underlying and exemplifying them all was demonstrated by Aristotle also in his *Meteorologica* and is known as the exhalation theory[417]. The theory is based on the theory of the four elements (fire, earth, air, water) which was introduced by the pre-Socratics and developed further by Plato[418]. Plato in his dialogue *Timaeus* (58d–59c) includes metals as a special category of the element, water. The fusibility of metals, combined with their ability to remain solid under normal conditions, it was reasoned, could be explained as their being composite substances, having both liquid and solid constituents.

Water was the element that shaped the surface of the earth and also subterranean geology[419]. In mythological thought, Poseidon who was the god governing the sea, the water element, was also the Earth-Shaker[420], the one responsible for earthquakes and the eruption of volcanoes since they were all attributed to the movement of water.

Aristotle developed the theory of four elements even further in combination with the exhalation theory in his treatise *Meteorologica*[421] written in the middle of the fourth century BC. He applied it to explain the generation of metals, lightning, clouds, thunder, and also earthquakes and volcanic eruption since they were all considered meteorological phenomena, and the effective results of the perpetual process known as the double exhalation of the earth. Aristotle, in an attempt to give a rational explanation for the movement of the vapours, in his first book introduces the theory that fire, which causes the warmth necessary for the subterranean exhalations, is produced by the motion of the stars, the heavenly bodies and mainly, the motion of the sun[422].

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[417] Aristotle, *Meteorologica.*

[418] Halleux, *La probleme des metaux dans la science antique*, p. 97, n. 2.

[419] An extensive account of these perceptions as expressed in mythology and philosophy is given in Forbes, *Studies in Ancient Technology*, pp. 1-37.

[420] A. B. Cook, *Zeus : a study in ancient religion / Vol.3, Zeus, God of the dark sky : (earthquakes, clouds, wind, dew, rain, meteorites).* vol. III (Cambridge: Cambridge University Press, 1940), pp. 1-20.

[421] Aristotle *Meteorologica* translated by E. W. Webster in http://www.greektexts.com/library/Aristotle/Meteorology/eng/index.html

[422] Aristotle, *Meteorologica.* Book I. 2 "So we must treat fire and earth and the elements like them as the material causes of the events in this world (meaning by material what is subject and is affected), but must assign causality in the sense of the originating principle of motion

He suggests that the material cause of all these phenomena is exhalation but the efficient cause is "sometimes the upper motion, sometimes the contraction and condensation of the air" which produces heat. This heat could reach subterranean moisture and produce a moist exhalation and the action of this heat on subterranean earthy material would create a dry exhalation[423].

The veins of metals and ores are generated when dry and moist exhalations remain trapped in underground hollows and "particularly if it is trapped in rocks" where they are condensed and hardened together[424]. All metals contain the dry exhalation, which is combusted fire and that is why they get affected by fire and contain earth[425].

Aristotle's mineral genesis theory recognises metals as homogeneous substances composed of elemental earth and water and explains their generation by the transmutation of vapours "through the compacting and thickening process of concoction"[426].

The explanation Aristotle gives about lightning is that "It usually happens that the exhalation that is ejected is inflamed and burns with a thin

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to the influence of the eternally moving bodies." And also Book I, 3 "the fire surrounding the air is often scattered by the motion of the heavens and driven downwards in spite of itself."

[423] D. E. Eichholz, "Aristotle's Theory of the Formation of Metals and Minerals," *Classical Quarterly* xliii (1949): pp. 141-145.

[424] Aristotle, *Meteorologica*. III 6, 378a ff. "We maintain that there are two exhalations, one vaporous the other smoky, and there correspond two kinds of bodies that originate in the earth, 'fossiles' and metals. The heat of the dry exhalation is the cause of all 'fossiles'. Such are the kinds of stones that cannot be melted, and realgar, and ochre, and ruddle, and sulphur, and the other things of that kind, most 'fossiles' being either coloured lye or, like cinnabar, a stone compounded of it. The vaporous exhalation is the cause of all metals, those bodies which are either fusible or malleable such as iron, copper, gold. All these originate from the imprisonment of the vaporous exhalation in the earth, and especially in stones. Their dryness compresses it, and it congeals just as dew or hoar-frost does when it has been separated off, though in the present case the metals are generated before that segregation occurs. Hence, they are water in a sense, and in a sense not. Their matter was that which might have become water, but it can no longer do so: nor are they, like savours, due to a qualitative change in actual water. Copper and gold are not formed like that, but in every case the evaporation congealed before water was formed. Hence, they all (except gold) are affected by fire, and they possess an admixture of earth; for they still contain the dry exhalation."

[425] Eichholz, "Aristotle's Theory of the Formation of Metals and Minerals," pp. 141-146. pp. 141-6

[426] "Concoction is a process in which the natural and proper heat of an object perfects the corresponding passive qualities, which are the proper matter of any given object. For when concoction has taken place we say that a thing has been perfected and has come to be itself. It is the proper heat of a thing that sets up this perfecting, though external influences may contribute in some degrees to its fulfilment." Aristotle, *Meteorologica*. Book IV, 2, 11

and faint fire: this is what we call lightning, where we see as it were the exhalation coloured in the act of its ejection"[427].

The theories of the exhalations, the growth of the metals to restock the deposits, the "marriage of the metals", the connection between planets and metals were developed even further during the Hellenistic period (fourth to second centuries BC)[428]. The above and the idea of transmutation, which is implicit in Aristotelian theory, led to the doctrines of alchemy, which were based on technological knowledge and the various implementations of metallurgy, obscured by philosophical ideas and/or superstitious beliefs, combined with the desire for redemption through the attainment of power and resources to achieve perfection[429].

It is worth quoting Luther's statement on the subject from *Tischreden* (Table Talk):

> "The science of alchemy I like very well, and indeed, it is truly the natural philosophy of the ancients. I like it not only for the many uses it has in decorating metals and in distilling and sublimating herbs and liquors, but also for the sake of the allegory and secret signification, which is exceedingly fine, touching the resurrection of the dead at the Last Day. For, as in a furnace the fire retracts and separates from a substance the other portions, and carries upward the spirit, the life, the sap, the strength, while the unclean matter, the dregs, remains at the bottom, like a dead and worthless carcass [here Luther uses further illustrations of the preparation of wine, cinnamon, and nutmeg], even so God, at the day of judgment, will separate all things through fire, the righteous from the ungodly"[430].

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[427] Ibid. book II

[428] Healy, *Mining and Metallurgy in the Greek and Roman World*, p. 19.

[429] The bibliography on this very controversial subject is vast. About the beginnings of Alchemy and the Hellenistic conceptions see M. Berthelot, *Collection des Anciens Alchimistes Grecs* (Paris: G. Seinhel, 1888). Another study on historical and scientific development of Alchemy in Lynn Thorndike, *A History of Magic and Experimental Science; during the first thirteen centuries of our era*, 2 vols. (London: MacMillan and Co, 1923). An illustrated edition about symbols and practices of alchemy in Alexander Roob, *The Hermetic Museum : Alchemy & Mysticism* (Koln, London: Taschen, 2001).

[430] Quoted by John Warwick Montgomery, "Cross, Constellation, and Crucible: Lutheran Astrology and Alchemy in the Age of Reformation," *Transactions of the Royal Society of Canada* 1, Ser. 4 (1963): p. 263.

The idea of the earth's exhalation was variously incorporated into the sulphur-mercury theory of metal composition by medieval Arabic authors, and the idea of mineral seeds (derived from Aristotle's proto-metallic substances) and metallogenesis, became very influential during the sixteenth and seventeenth centuries[431].

In a more technically-orientated book on mining from the early sixteenth century, the *Bergbuchlein*, a simplified version of the exhalation theory is given as an explanation for the metallogenesis and astral influences are regarded as responsible for generating the earth's internal heat, following the initial theory of Aristotle, but in addition they are also held responsible for directing the development of specific metals[432], connecting metals with particular planets according to the Hellenistic tradition[433]. The orientation and inclination of the lodes[434] are connected with the points of the compass[435]. Another interesting aspect is that the influence of the planets is materialised through stringers, the thin surface veins that transfer the impact from the stars (the metallic genitor) into the deeper veins so that the metals could be formed through transmutation of the elements[436]. This also reflects the ancient belief that the metallic materials grow in the mine, an idea that in medieval thought would develop the description of the metalliferous veins analogous to a tree and would compare the mine with a plant covered with earth[437].

The book *De Re Metallica* of Agricola[438] shows evidence of extensive knowledge of ancient theories and beliefs and follows Aristotle's

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[431] A very interesting article on the theory and its revival in recent scientific research in John A. Norris, "The Mineral Exhalation Theory of Metallogenesis in Pre-Modern Mineral Science," *AMBIX* 53, no. 1 (2006): pp. 43-65.

[432] Daubree, "La generation des mineraux metalliques dans la pratique des mineurs du Moyen Age, d' apres le Bergbuchlein," p. 387.

[433] Berthelot, *Collection des Anciens Alchimistes Grecs*, Introduction. Also in Halleux, *La probleme des metaux dans la science antique*, pp. 152-155. On the vast influence of this theory and the correspondence between planets and metals in the Middle Ages in Adams, *The Birth and Development of the Geological Sciences*, pp. 148-150.

[434] The word "lode" is used to describe the vein of ore but it is also the term used for the "guiding principle star by which a ship may be steered".

[435] Daubree, "La generation des mineraux metalliques dans la pratique des mineurs du Moyen Age, d' apres le Bergbuchlein," p. 388.

[436] Ibid.: pp. 443, 447-448. «...un réceptacle naturel, bien approprie et comparable a l'utérus chez les animaux. Tels sont les filons [...] pour servir de passage aise à l'agent minéralisateur (l'influence génératrice des astres)...»

[437] Eliade, *The Forge and the Crucible*, p. 45.

[438] Agricola, *De Re Metallica. Translated from the first Latin edition of 1556, with biographical introduction, annotations and appendices upon the development of mining methods... from the earliest times to the 16th century.*

theory on the generation of metals. Agricola declares that medicine, astronomy, and philosophy are the fields of knowledge a miner should be able to command in order to be successful in treating diseases caused by mining and metals, and he should be able to determine the direction of the veins, according to the divisions of the heavens[439] while philosophy was useful so he can understand the way the metals are generated[440].

Another source of ancient knowledge and concepts about metallurgy and mining comes from the Italian metallurgist Vannocio Biringuccio and his book *De La Pirotechnia* published in 1540[441]. His ideas regarding the formation of metals are also Aristotelian and he assumes the influence of the planets[442]. He also gives a detailed description and drawings of "an apparatus for sublimation by ascent and by descent" which are called furnaces with towers (or Athanor) and they are often built like towers "with their battlements, copings, embrasures, and other attractive ornaments that show in their design the form of real ones"[443]. Biringuccio, in the last chapter of his book, considers fire as the cause of attraction and "marriage" between all the elements in nature, like metals and people, and he gives it a very poetic title, "Concerning the Fire that consumes without leaving ashes, that is more powerful than all other fires, and that has as its smith the great son of Venus" referring to Cupid's Fire[444].

The concept of the fertility of the earth and the regeneration of metals through impact from the heavens survived up to the eighteenth century, as is testified in the English edition (1718) of Tournefort's journey in the Near East (in 1700) where in the Royal Society's preface it is stated that

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[439] The great interest in Astronomy and the multiple applications this knowledge had in antiquity is confirmed by the ancient Greek astronomical calculator (known as the Antikethyra Mechanism) that was discovered in a Roman shipwreck in 1901. According to the most recent scientific research, undertaken by an international team, the mechanism was built around the end of the second century BC and could calculate and display celestial information. The mechanism "is technically more complex than any known device for at least a millennium afterwards" and predicted lunear and solar eclipses while the inlaid inscriptions suggest mechanical diplay of planetary (Venus, Hermes and Mars) positions. The most recent article that also includes all previous bibliography in T. Freeth et al., "Decoding the ancient Greek astronomical calculator known as the Antikythera Mechanism," *Nature* 444, no. 30 (2006).

[440] Agricola, *De Re Metallica. Translated from the first Latin edition of 1556, with biographical introduction, annotations and appendices upon the development of mining methods... from the earliest times to the 16th century*, Book 1, pp. 3-4.

[441] Biringuccio, *Pirotechnia*.

[442] Ibid., pp. 45,46,79.

[443] Ibid., pp. 354-355, fig 69, 70, 71.

[444] Ibid., pp. 444 ff.

"[...] M. Tournefort may be call'd the Restorer of the System of the Vegetation of Stones and the founder of that of Universal Vegetation"[445].

Discussion

It is evident from the above analysis that the ancient understanding of metallurgy and mining involved concepts concerning the fecundity of Mother-Earth, the "marriage" or union of elements as a procreative stage, the ability of nature to transmute matter, cosmological theories that adapted the regeneration and unity of the universe, initiation rituals similar to the "rites of passage", astronomical observations for practical purposes like estimating the directions and most probably enhancing the impact on the metals from the heavens. The necessary rituals expected to be performed in association with the very important issue of the prospecting and mining of the ores, have not yet been established. Eliade, in his seminal book on ancient metallurgical concepts, systematically and intentionally avoids getting involved in such an inquiry[446].

The Thracian mysteries connected with the metallurgic clans of the Kabeiroi, like the ones associated with Dactyloi and Telchines, are not fully explored and any information that might have survived seems to have been blurred with mythology[447]. Hephaestus was the god of the smiths, the metalworkers and he had not been attributed with properties that could have connected him with mining; on the contrary, he was always described or depicted working as a metalworker[448]. The research on the religious pantheon of Siphnos, in accordance with other metallurgical areas in Greece that have been associated with the Siphnians, such as Athens, will attempt to identify rituals that could have been connected with mining and metallurgy.

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[445] See the introduction in the English edition of Joseph Tournefort de Pitton, *Relation d'un voyage du Levant. In English. A voyage into the Levant: perform'd by command of the late French king. Containing the ancient and modern state of the islands of the Archipelago*, trans. J. Ozell, 2 vols. (London: D. Browne, A. Bell, J. Darby, A. Bettesworth, J. Pemberton, C. Rivington, J. Hooke, R. Cruttenden and T. Cox, J. Battley, E. Symon, 1718).Vol. 1 p. xx.

[446] Eliade, *The Forge and the Crucible*, p. 69, n. 1. "We do not intent to reconstruct any particular mythico-ritual pattern".

[447]Kerenyi, "Mysterien der Kabiren," pp. 11-60. Also in Jeanmaire, *Couroi et couretes : essai sur l'education spartiate et sur les rites d'adolescence dans l'antiquite hellenique.*

[448] Walter Burkert, *Greek Religion: Archaic and Classical*, trans. John Raffan (Oxford: Blackwell, 1985), p. 168.

CHAPTER 5
The meaning of the Architectural Form of the Tower

In the discourse of architecture, a tower is usually described as "a tall structure of any form or plan high in proportion to its lateral dimensions often rising in stages (rather than storeys) free standing or part of another building"[449]. The architectural form of the tower has been extensively used from the beginning of human civilization up to today by most peoples in almost every continent and the similarities in the morphological and structural solutions existing among different periods of time and different cultures is striking[450].

In the course of the present search for the meaning and essence of the architecture of the tower, invariant notions and elements have been identified that seem to be intrinsic to this prominent architectural form. These "invariants" are persistent in spite of the morphological and functional plurality the tower has displayed historically. These constant metamorphoses reflect the diversity of the cultural and historical contexts in which the various towers were constructed.

As already stated, in the philosophical and theoretical approach, architecture is understood to be the cumulative outcome of: the properties of the building, the structure itself, and the ideas, principles and intentions of the people that created a specific architectural form. In this research, the aim is to analyse and determine the architectural qualities inherent in the form that made the tower and which accounts for its being selected to serve and respond to particular and distinctive purposes and to fulfil certain requirements of the people that constructed it[451].

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[449] James Stevens Curl, *Dictionary of architecture* (Oxford: Oxford University Press, 1999).
[450] Giannis Kizis, *Pelioreitike Oikodomia: H Architektonike tes katoikias sto Pelio apo ton 17o ston 19o aiona. (In Greek)* (Athens: ETBA, 1994), pp. 87-97. The above argument is based mainly on the results of a survey and a comparative analysis on tower houses from around the globe, published at 1976 in Moscow, in M. Djandieri and G. Lezava, *Narodnaja basennaja arhitektura* (Moscow: 1976).
[451] Edmund Husserl, *The idea of phenomenology : a translation of Die Idee der Phanomenologie ; Husserliana II / Edmund Husserl*, trans. Lee Hardy (Dordrecht, London: Kluwer Academic, 1999). In chapter I-1 of *Ideen I* he had distinguished states of affairs (*Sachverhaltnis*) from essences (*Wesen*) by assigning them to two "spheres": the factual or material, and the formal or eidetic, respectively. These spheres are connected only by the mind's ability to pass *between* them as easily as moving around *within* either of them.

This attempt involves the analysis of architecture and in the particular case of the tower, as a structure, but equally, also as *noema* (meaning) that has been attributed to space; it is through the presence of architecture, perceived as structured meaning, that man transforms space into "place"[452].

The transformation of space into place is achieved when a space acquires meaning for a particular culture, for the members of a society and the space is attributed symbolic or functional "signs", thus becoming meaningful at a physical and intelligible level. This understanding is based on common perceptions that the members of a society share, within a pre-agreed and determined system of signs, "significant symbols" that according to certain anthropologists, like Geertz, define "culture" [453]. In order to be able to interpret and understand phenomena, it is necessary to depart from the -nevertheless- essential empirical experience and to identify the established, systematic connections and interactions between them[454].

In Aristotle's philosophy, as expressed in the hylomorphic theory[455], all physical things are composed of form and matter. Form, however, is a principle of being and does not exist by itself. Matter, as pure potentiality, can exist only as actualized by form.

"Plainly then, if there are conditions and principles which constitute natural objects and from which they primarily are or have come to be-have come to be, I mean, what each is said to be in its essential nature, not what each is in respect of a concomitant attribute-plainly, I say, everything comes to be from both subject and form."[456]

What is particularly intriguing about architecture and in this case about the architectural form (*eidos*) of the tower, is that there are consistent qualities and properties in each and every case that are inherent to the form (*eidos*)[457] and they transcend historical and cultural boundaries. These

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[452] A similar approach has been applied in architecture by Norberg Shultz in his books, even though the present thesis distances from Scultz in many aspects. See in Norberg-Schulz, *Genius Loci: Towards a Phenomenology of Architecture*.

[453] "Culture, the accumulative totality of such patterns (organised systems of significant symbols) is not just an ornament of human existence but –the principal basis of its specificity- an essential condition of it." in Geertz, *The Interpretation of cultures*, p. 46.

[454] Maurice Merleau-Ponty, *Signes* (Paris: 1960), pp. 47-48.

[455] Williams, Bernard, 1986. 'Hylomorphism.' *Oxford Studies in Ancient Philosophy* 4: 189-99

[456] Aristotle, Physics, 7.

[457] Eidos : Greek term for what is seen—figure, shape, or form. In the philosophy of Plato, the eidos is the immutable genuine nature of a thing, one of the eternal, transcendent Forms apprehended by human reason (*nous*). Aristotle rejected the notion of independently existing Forms and understood them instead as abstract universals. By extension, Husserl used the

qualities can be traced following a comparative methodology through diverse disciplines of inquiry; however, the outcome can never determine the spatial and intelligible qualities that the form inevitably possesses. The results of such an investigation could only be successful if the researcher were to rise above his/her own cultural and academic limitations and/or presuppositions[458]. For example, the presumption that every tower is defensive or sovereign is an interpretation of the intrinsic architectural quality of surveillance (over its surroundings) that the architecture of the tower has.

In an attempt to identify the *noema*, the essence, we have to go "back to the thing"[459] analysing the *phenomenon* (the thing as it appears) and unveiling, revealing the *noumenon* (the thing as it is thought)[460].

In the present research, various historical expressions and manifestations of the tower as *eidos* will be analysed across different disciplines (architecture, literature, cosmogony myths, religion, symbolism) in an attempt to detect its eidetic structure and constitute the essence(s) which are present (or included) in every perceptual judgement. The following section concentrates on the appearances of the tower in the period before and during the construction of the Greek towers.

Etymology or the history of the word

The investigation will begin with the "name of the thing" since the name in many cases gives not just a description but a meaning of the thing named, especially in ancient languages[461]. Etymological research is a kind of archaeology of language where the revealing of the successive strata of the

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term "eidetic" for the phenomenological apprehension of essences generally. See in Francis E. Peters, *Greek Philosophical Terms: A Historical Lexicon* (New York and London: 1967), pp. 46-51.

[458] Edmund Husserl, *The shorter logical investigations*, trans. J. N. Findlay (London: Routledge, 2001), pp. 71 ff. The interconnection of things and the interconnection of truths. See also in pp. 97-97 about presumptions.

[459] Maurice Merleau-Ponty, *Phenonenology of Perception*, trans. Colin Smith, English ed., *Routledge Classics* (London and New York: Routledge, 2002), pp. 348 ff.

[460] The approach in the present thesis is not the Kantian interpretation of noumenon but closer to Husserl's "transcendental" phenomenology which is an approach to philosophy that takes the intuitive experience of phenomena (what presents itself to us in phenomenological reflection) as its starting point and tries to extract from it the essential features of experiences and the essence of what we experience.

[461] Ancient languages is considered, among others, Greek, having a continuing line of development from at least the fourteenth century BC up to nowadays; see the Preface in Chatwick, *The Mycenaean World*, p. xv.

historical development of the word can be used to trace the history of ideas and the order and structure of the thought of the people who have invented and/or used of the word.

According to ancient cosmogonies, the Egyptian god Ra created the universe by word, like the Babylonian Great God and the Hebrew God as it is stated in Genesis and it seems that "to all ancient peoples the name of a thing was a magical concept"[462]. Even today contemporary thinkers like Derrida -probably acting as the creators of new cosmological myths- recognise the power of name-giving as a dominant force[463].

The Words Tower, Turris, Pyrgos, Burgh-o

The English word *tower* comes from the Latin word *turris*[464] which is an adaptation of the Greek word *τύρρις* or *τύρσις*[465], meaning the tower projected from a wall bastion or the upper part of a free-standing tower[466]. The word was used first in literature by Pindar in the Olympian Odes[467], to describe the powerful dwelling of Cronus. The origin of the word derives from the word *τυρσήν* which, according to Robert Graves[468], was used to describe the Tyrrhenian ships, the ships from the Phoenician city of Tyre, the infamous rival of the Greeks in trade and the legendary birthplace of Kadmus and Europa[469]. The same word *τυρσήν* was also the etymological root of the name of the mythological tribe of metallurgists the "Telchines"[470].

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[462] Barbare Watterson, *Gods of Ancient Egypt* (Gloustershire: Sutton Publishing, 1996), p. 40. Ra spoke the Word and by speaking the name of things he created them.
[463] Jacques Derrida, "Architecture Where the Desire may live," in *Rethinking Architecture*, ed. Neil Leach (London & New York: Routledge, 1997), p. 322."...there too (the tower of Babel) is to be conquered in an act of name-giving [...] This conquest of the sky, this taking up of a position in the sky means giving oneself a name and from this power, from the power of the name, from the height of the meta-language, to dominate the other tribes, the other languages, to colonize them."
[464] Hesychius *Corpus Lexicographorum Graecorum* (fifth c. A.D.) author of the most important Greek lexicon known from antiquity, valued as a basic authority for the dialects and vocabularies of ancient inscriptions, poetic text, and the Greek Church Fathers.
[465] Stephanus Thesaurus Graecae Linguae, 1829, Akademische Druck – U. Verlangsanstalt, edition Graz 1954, very comprehensive, includes all ancient literature references of the word.
[466] Greek – English Lexicon, Liddel and Scott, Oxford, various editions
[467] Pindar *Olympian Ode 2* For Theron of Acragas Chariot Race in 476 BC "...follow Zeus' road to the end, to the tower of Cronus, where ocean breezes blow around the island of the blessed, and flowers of gold are blazing,..."
[468] Graves, *The Greek Myths*, 54. 1.
[469] See in Chapter 4 of this thesis, on metallurgy, pp. 104-105
[470] About Telchines see Graves, *The Greek Myths*. Index, and Chapter 4 of the present thesis.

These ships were built in the Phoenician city Tyre (now in Lebanon) and were famous in antiquity (from the eighth century BC and later) for their projective defensive deck, a "fighting deck protected by shields" and were used both for commercial and military purposes[471].

They were legendary in antiquity and their name became synonymous with the power and wealth of the Tyrrhenians themselves. It is characteristic that Ezekiel is using the "Ship of Tyre" as a metaphor for the allegory about the tyranny of Tyre (but secretly referring to Babylon), to denote power and wealth and their disastrous implications[472]. The allegory is a prelude to the later story of the destruction of the Tower of Babel[473].

There are several representations of these nautical forts in Assyrian bas-reliefs like the one of the seventh century that was found in the palace of Nineveh and its resemblance to the upper part of a tower (which is the main meaning of the word *turris* in Greek) is quite explicit.

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[471] Lucien Basch, "Phoenician Oared Ships," *Mariner's Mirror* 55, no. 2, 3 (1969): p. 150. The true "long ship" seems to have been confined to the Aegean and it is certainly no accident that from the Cycladic period onwards the ships known from archaeological discoveries in Greece have been more and more specialized warships. In Phoenicia, for reasons easily understood, there was less need for such ships and naval construction tended towards a mixed type. We know too that the kind of ship called *gurgurru* by the Assyrians, *kirkarah* by the Phoenicians and *kerkouros* by the Greeks, a vessel equally suited for commerce and for war, was typically Phoenician. (Barnett, p. 229 also Torr, Ancient Ships, pp. 110-11). It is interesting to note that there were in fact two mixed types: the ship with a ram retained the rounded shape, while the round ship of Layard's engraving had a fighting-deck protected by shields, a feature hardly to be expected in a pure merchantman, and was given a warlike appearance by its two rows of oars (origin about 700 BC). On p.161 a note from Plutarch is still more important. According to him Pericles took care not to send his triremes against the Persians at Salamis, "until the hour of the day had come which brought the breeze fresh from the sea and a swell rolling through the straits. This breeze wrought no harm to the Hellenic ships, *since they were low in the water and were rather small*; but for the Barbarian ships, *with their towering sterns and lofty decks* and sluggish movements in getting under way, it was fatal, since it smote them and slewed them round broadside to the Hellenes".(Plutarch, Themistocles, XIV, 2 translation of Loeb Classical Library). Reading this description we can almost see the two Arados staters and the Erment model.(British Museum and Danish National Museum)

[472] Wilfred Harvey Schoff, *The ship "Tyre" : a symbol of the fate of conquerors as prophesised by Isaiah, Ezekiel and John and fulfilled at Nineveh, Babylon and Rome: a study in the commerce of the Bible.* (London: 1920), pp. 41,59. "The ship "Tyre" is the symbol of Chaldea; [...] and her doom is the doom of Babylon herself." Also pp. 71-73 with detailed description of the fortified Phoenician vessels and extensive ancient bibliography on the subject.

[473] More on this subject below in pp. 133 ff.

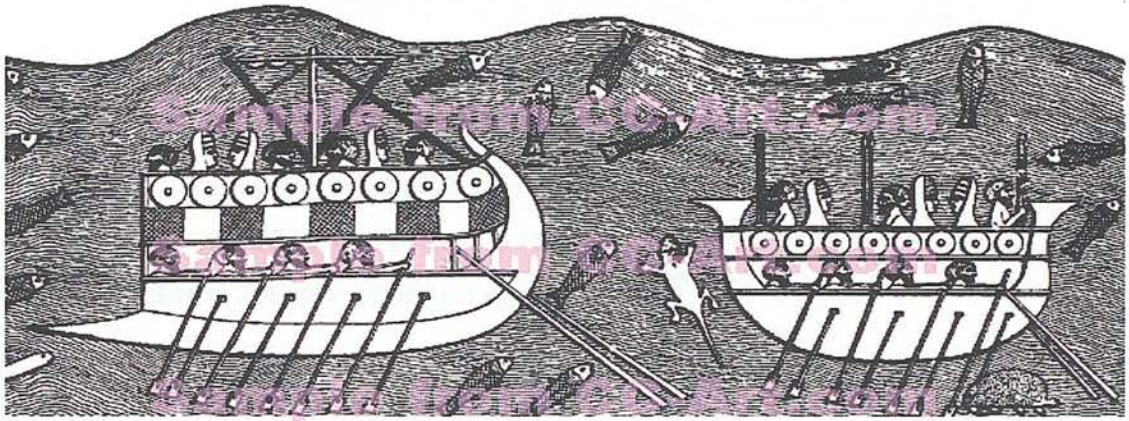

Figure 25. Assyrian Bas- Relief: the fleet of Sennacherib navigating the Nar-Marratum[474].

The origin of these boats must have been the round, flat-bottomed boat *kufa*[475] or basket, that was used by the Chaldaeans to cross the Tigris and Euphrates and can been seen in Assyrian bas-reliefs from Nineveh[476] carrying blocks of dressed stones. These *kufas* would be used across the Gulf to carry stone, building timber, metals and perfumes from the Yemen and even pearls from the Bahrain Islands to Mesopotamia[477].

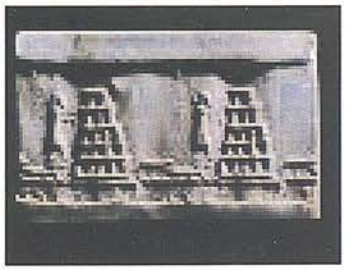

Figure 26. Kufas carrying stones through the river

[474] From a relief excavated upon the site of Nineveh. Layard *The monuments of Nineveh,* Reproduced by Maspero, *The Passing of the Empire,* and reproduced by Schoff, *The ship "Tyre" : a symbol of the fate of conquerors as prophesised by Isaiah, Ezekiel and John and fulfilled at Nineveh, Babylon and Rome: a study in the commerce of the Bible.*
[475] G. Maspero, *The dawn of Civilization. Egypt and Chaldaea*, trans. M. L. McClure (London: Society for Promoting Christian Knowledge, 1896), p. 615.
[476] Ibid., p. 542.
[477] Ibid., p. 161.

Similar boats, the *keleks,* were described by Herodotus[478] "round as a shield" and were employed for trading purposes but also piratical expeditions.

What is particularly interesting about the *kufa* is that it served also as a model for the representation of the cosmos for the Chaldaeans and the Egyptians, who believed that the earth looked like an overturned boat in appearance and had a hollow underneath[479].

The word **τύρσις** or **τύρρις**[480] turris was used in Ancient Greek to describe a tower (πύργος), a bastion, or a rampart, and had similar meanings in Latin[481], and later in French, German and English[482].

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[478] Herodotus Hist. b. i. 194 τα πλοία αυτοίσι εστί τα κατά τον ποταμόν πορευόμενα ες την Βαβυλώνα, εόντα κυκλοτερέα, πάντα σκύτινα...
Herodotus, *Herodotus, with an English translation by A. D. Godley.* "Their boats which ply the river and go to Babylon are all of skins, and round. [2] They make these in Armenia, higher up the stream than Assyria. First they cut frames of willow, then they stretch hides over these for a covering, making as it were a hold; they neither broaden the stern nor narrow the prow, but the boat is round, like a shield. They then fill it with reeds and send it floating down the river with a cargo; and it is for the most part palm wood casks of wine that they carry down. [3] Two men standing upright steer the boat, each with a paddle, one drawing it to him, the other thrusting it from him. These boats are of all sizes, some small, some very large; the largest of them are of as much as five thousand talents burden...."

[479] Maspero, *The dawn of Civilization. Egypt and Chaldaea*, p. 543, n. 2.

[480] Τύρσις ,η(, gen. ioj Hp.Art.43, X.An.7.8.12; -ιδος IG12(7).115.4 (Amorgos, ii/i B. C.); acc. A. τύρσιν Pi. O. 2. 70, Hp.l.c., X.An.7.8.13: nom. and acc. pl.Τύρσεις, gen. εων , dat. εσι , ib.4.4.2, HG4.7.6, Cyr.7.5.10; acc. pl. Τύρσιας Lyc.834 , Maiist.2:--also τύρρις , Hsch. (whence Lat. turris is borrowed):--tower, Pi. l.c., Hp. l. c. (cf. Gal.18(1).518); esp. tower on a wall, bastion, X. ll. cc.; opp. προμαχών, sq.; also, walled city or fortified house, Nic.Al.2; = villa rustica, πύργος, IGl.c.
Liddell and Scott, *A Greek-English Lexicon revised and augmented throughout by. Sir Henry Stuart Jones with the assistance of Roderick McKenzie.*

[481] turris, is (acc. turrim and turrem; abl. turri and turre; v. Neue, Formenl. I. 196 sqq.), f., =τύρρις**I. Lit.**
A. In gen., a tower: eā ballistā si pervortam turrim, Plaut. Bacch. 4, 4, 59: apud vetustam turrem, Att. ap. Prisc. p. 761 P.: Dionysius contionari ex turri altā solebat, Cic. Tusc. 5, 20, 59 : in omni turre, Val. Fl. 1, 14 : celsae graviore casu Decidunt turres, Hor. C. 2, 10, 11 ; cf. altae, id. Epod. 17, 70: Dardanae, id. C. 4, 6, 7 : aënea, Ov. Am. 2, 19, 27.
B. In partic., a military tower, for defence of a camp or the walls of a city: turrim in praecipiti stantem Adgressi ferro, Verg. A. 2, 460 ; Caes. B. G. 5, 40; 6, 29; id. B. C. 3, 9; Cic. Prov. Cons. 2, 4; for attack in a siege, Caes. B. G. 3, 21; Cic. Fam. 15, 4, 10;Liv. 32, 17, 17;on the backs of elephants, id. 37, 40, 4 ; on a ship, id. 37, 24, 6 et saep.
II. Transf.
A. For any high building, a castle, palace, citadel: pauperum tabernas Regumque turres, Hor. C. 1, 4, 14 ; so, regia, Ov. M. 8, 14 : Maecenatiana, Suet. Ner 38 : maris vastum prospectet turribus aequor, Tib. 1, 7, 19 .
B. A dove-cot built in the form of a tower, Varr. R. R. 3, 3, 6; Ov. P. 1, 6, 51.
C. A kind of battle array when the troops were arranged in a square, Cato ap. Fest. s. v. serra, p. 344 Müll.; cf. Gell. 10, 9, 1.
A Latin Dictionary. Founded on Andrews' edition of Freund's Latin dictionary. revised, enlarged, and in great part rewritten by. Charlton T. Lewis, Ph.D. and. Charles Short, LL.D. Oxford. Clarendon Press. 1879.

[482] Pierre Chantraine, *Dictionnaire Etymologique de la Langue Grecque* (Paris: Editions Klincksieck, 1968), p. 1147.

Πύργος or **purgos**[483], is another word which in ancient literature was used first by Homer in the Iliad and Odyssey and means a tower. According to the context in which the word was used, it could also mean the part of the house where women would live and work; and from a fragment preserved by Aristotle[484], we are given the information that Pythagoras used the term Ζαννός Πύργος (Zeus's Tower) to describe the central fire of cosmos from which all life emerged and around which all the universe rotates.

The word **Burgus**[485] derives from the above-mentioned Greek word which, according to etymological research, is pre-Hellenic and cognate with the Sanskrit word burg-o[486] which means the highest. From the same word derives the word "burg" which came into the Romance languages from the Germanic and it means an ancient fortress or a walled town. According to

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[483] Πύργος, ο,
a. tower, esp. such as were attached to the walls of a city, Il.7.219, al., Hes.Sc.242, Hdt.3.74, al., Th.2.17, al., Plb.5.99.9, etc.: in pl., city walls or ramparts with their towers, Il.7.338, 437; in sg., ηντ' επί πύργω \ 3.153 , cf. 22.447;πόλιος ήν περι πύργος υψηλός Od.6.262 ;
b. movable tower for storming towns, X.Cyr.6.1.53, 6.2.18; p. υπότροχοι Onos. 42. 3 .
c. *tower* on the back of war-elephants, Arr.*Tact.*2.4.
d. Zanos p ., Pythagorian. name for the central fire of the universe, Arist. *Fr.*204.
2. metaph., tower of defence, of Ajax, Od.11.556; Alc.Supp.1a .10; E.Alc.311 , cf. Med.390; απας μοι πύργος. Ελλήνων πατρίς Trag. Adesp.392 ; Θανάτων δ' εμά χώρα πύργος.ανέστα a tower of defence from deaths, S.OT1201 (lyr.).
3. the part of a house (prob. a separate building) in which the women lived and worked, D.47.56 ; esp. if unmarried, as Hero in her tower, Musae.32,187, cf. Philostr.Jun.Im.1; of the workman's hut of Timon the misanthrope (which also became his tomb, cf. Luc.Tim.42), Paus. 1.30,4, cf. AP 7.402 (Antip.); outbuildings, esp. if used in industry, LXX Is.5.2, Mi.4.8, PStrassb.110.6 (iii B.C.), BGU1194.9 (ii B.C.), 650.8 (i A.D.), POxy.243.15 (i A.D.), Ev.Marc.12.1, Ev.Luc.14.28, PGiss.67.16 (ii A.D.), IG22.2776.65 (ii A.D.);
II. part of an army drawn up in close order, column, Il.4.334,347.
2. at Teos, a division of the people, CIG3064,3081, al.
III. *dice-box,* AP9.482.24 (Agath.); cf. Lat. *pyrgus.*
Liddell and Scott, *A Greek-English Lexicon revised and augmented throughout by. Sir Henry Stuart Jones with the assistance of Roderick McKenzie.*

[484] Aristotle, *De coel.* ii. 13; 293 a 19. They say that the whole heaven is limited, the opposite to what those of Italy, called the Pythagoreans, say; for these say that fire is at the centre and that the earth is one of the stars, and that moving in a circle about the centre it produces night and day. And they assume yet another earth opposite this which they call the counter-earth, not seeking reasons and causes for phenomena, but stretching phenomena to meet certain assumptions and opinions of theirs and attempting to arrange them in a system.[...] And farther the Pythagoreans say that the most authoritative part of the All stands guard, because it is specially fitting that it should, and this part is the centre; and this place that the fire occupies, they call the guard of Zeus, as it is called simply the centre, that is, the centre of space and the centre of matter and of nature.

[485] burgus, i, m. [cf. πύργος; Germ. Burg, Berg; Engl. -burg, borough, -bury] , I. a castle, fort, fortress (post-class.): castellum parvulum, quem burgum vocant, Veg. Mil. 4, 10 : crebra per limites habitacula constituta burgos vulgo vocant, Isid. Orig. 9, 2, 99 ; 9, 4, 28; Cod. Just. 1, 27, 2, § 4; Cod. Th. 12, 19, 2; Sid. Carm. 22
Charlton T. Lewis, Charles Short, *A Latin Dictionary*

[486] Encyclopaedia Papyrus Larrouse (Greek Edition).

Chantraine the word is one of the rare terms that could provide some evidence about the Pelasgic theory[487].

Ancient Literature – Epics and Cosmogonies

The earliest reference to a tower as a powerful dwelling for the gods exists in the oldest surviving cosmological myth which is known as "Enuma Elish"[488] from the first words of the poem meaning "up to the highest". It is a Sumerian – Akkadian epic about the creation of cosmos[489]. This long poem was written principally in the twelfth century BC to celebrate the city of Babylon. It recounts the creation of the universe and the events that led up to the building of Babylon, "home for the gods". It evolved from Sumerian myths and the text that it is taken from is Assyrian, the empire that followed the Sumerian.

The main hero, Marduk builds a mansion, a magnificent edifice over the abyss (Apsu) which he defeats by measuring it and then (much later), he creates the cosmos and mankind[490] from the body of the primordial female when he defeats and slaughters Tiamat. The form of this "Great Palace" was reflected in the form of the Babylonian temples, the Ziggurats[491], the temple towers which were the earthly representation of the heavens and the earthly dwelling of the gods. Even though in practice it is the things terrestrial which

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[487] Chantraine, *Dictionnaire Etymologique de la Langue Grecque*, p. 958.
[488] King Leonard William, *The Seven Tablets of Creation, (*London, 1902).
[489] Remi Brague, *Wisdom of the World: the human experience of the universe in Western thought*, trans. Teresa Lavender Fagan (London, Chicago: University of Chicago Press, 2003), p. 10. Only a later version survives in Akkadian dating around 1100 BCE.
490 Enuma Elish: The fourth tamplet 141. He passed through the heavens, he surveyed the regions (thereof),
142. And over against the Deep he set the dwelling of Nudimmud.
143. And the lord measured the structure of the Deep,
144. And he founded E-shara, a mansion like unto it.
145. The mansion E-shara which he created as heaven,
146. He caused Anu, Bêl, and Ea in their districts to inhabit
Ancient Near Eastern Texts Translated by N. K. Sandars. Ea has defeated his enemies and trodden them down. Now that his triumph was completed, in deep peace he rested, in his holy palace Ea slept. Over the abyss, the distance, he built his house and shrine and there magnificently he lived with his wife Damkina.
He crossed the sky to survey the infinite distance; he station himself above apsu, that apsu built by Nudimmud over the old abyss which now he surveyed, measuring out and marking in. He stretched the immensity of the firmament, he made Esharra, the Great Palace, to be its earthly image, and Anu and Enlil and Ea had each their right stations.
[491] Jacquetta Hawkes, *The first great civilizations life in Mesopotamia, the Indus Valley and Egypt*, ed. Pelican books, *The history of human society* (Harmondsworth Penguin, 1977), Samuel Noah Kramer, *The Sumerians their history, culture, and character* (Chicago, London: University of Chicago Press, 1970).

are imaged in the heavens, in religious theory it is the other way as depicted in Babylonian, Egyptian, Hebrew and even in Chinese images of the world[492].

"As it is above, so it is upon the earth, for the Image of all that is in the Firmament, is here, upon Earth" is clearly stated in the Secret Gospels and in Exodus it is declared that the tabernacle was a representation of the Cosmos (heaven and earth) and so was Solomon's Temple in Jerusalem[493]. It should be mentioned that the tabernacle was a piece of metallurgical art consisting of "1,900 lbs. of gold, 6,437 lbs. of silver, and 4,522 lbs. of bronze"[494]. The temple of Solomon was built by the king of Tyre, Hiram, after Solomon invited him to design and execute the construction of the most magnificent building since Hiram was the only one that has the required knowledge and skill and also the means (masons, precious and rare materials) to materialise the intentions of Solomon[495]. Hiram was also the name of the metallurgist who would supply the temple with various gold, silver and bronze items, architectural or decorative[496].

Ziggurats

The most ancient form of a tower was a ziggurat, which as a construction was a stage tower associated with the Babylonian and Assyrian temples, and took the form of a terraced pyramid of successively receding stories. Ziggurats were common to the Sumerians, Babylonians and Assyrians of ancient Mesopotamia[497]. The earliest examples of ziggurats date from the end of the third millennium BC and the latest date from the sixth century BC. Built in receding tiers upon a rectangular, oval, or square platform, the ziggurat was a pyramidal structure[498]. Sun-baked bricks made up the core of

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[492] Alfred. Jeremias, *The Old Testament in the light of the ancient East. Manual of Biblical archaeology.*, trans. C. L. Beaumont, vol. 2 (London & New York: Williams & Norgate, 1911).Vol. 1, p. 52 on Ancient-Eastern doctrine and cosmos.

[493] Brevard S. Childs, *The Book of Exodus* (Philadelphia: The Westminster Press, 1974), p. 538. "Philo explained the tabernacle as a model of the universe whose four materials represented the elements of nature, and whose precious stones reflected the signs of the Zodiac (*Vita Cita Mos.* II. 88, 126)"

[494] Ibid., p. 637.

[495] Bible 1 Kings 5 and 6.

[496] Bible, 1 Kings 7.13-7.49.

[497] For a general overview in ziggurats see in Henri Frankfort, *The art and architecture of the ancient Orient*, 5th ed., *Yale University Press Pelican history of art* (New Haven ; London: Yale University Press, 1996), pp. 20-23.

[498] Ziggurats were described and drawn by the architect Chipiez in Georges Perrot and Charles Chipiez, *History of art in Chaldaea and Assyria*, ed. Walter Armstrong, trans. Walter

the ziggurat, with facings of fired bricks on the outside. The facings were often glazed in different colours[499] and it seems that the colours also had cosmological significance[500]. The stages of the ziggurats were connected with the seven spheres (planets or heavens) as is indicated in a text written by Nebuchadnezzar II (600 BC)[501] and the planets had a sympathetic association (initially based on the colour) with the seven metals known in antiquity[502]. Metallic amulets[503] have been found in the foundation deposits of ziggurats consisting of seven materials (which were then known as metals) and carrying inscriptions, corresponding to the seven planets[504].

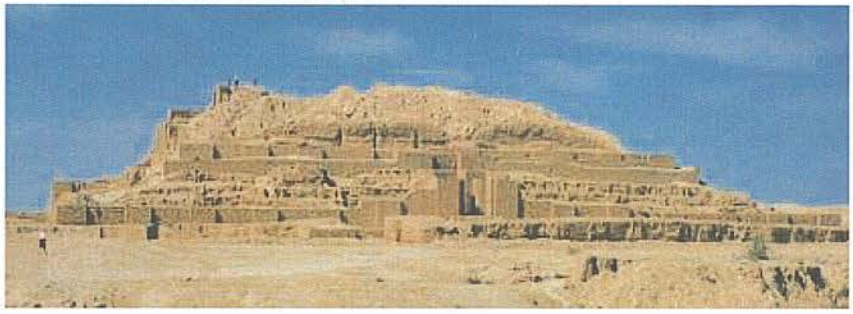

Figure 27. Ziggurat at Ur

On the top of the ziggurat there was a temple which was quite small and represented the earthen reflection of the heaven dwelling for the god and its space was just adequate for a "large well-cushioned couch and by it a golden table"[505]. Into this temple the ceremonial "sacred marriage" would be performed at the beginning of every year by a priestess (hierodule) and the descending god would manifest himself in the form of a high priest or king. This ceremony would enact the new cycle of vegetation on the earth, celebrating the fertility of the earth and the year's renewal[506]. This festival

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Armstrong, 2 vols., vol. ii (London, New York: Chapman and Hall, A.C. Armstrong and Son, 1884), pp. 379 ff.

[499] Partington, *Origins and Development of Applied Chemistry*, p. 275."...these colour stages represented the seven planets."

[500] Eric Burrows, "Some Cosmological Patterns in Babylonian Religion," in *Labyrinth. Further studies in the relation between myth and ritual in the ancient world*, ed. S.H. Hooke (London: Society for Promoting Christian Knowledge, 1935), pp. 69-70.

[501] Partington, *Origins and Development of Applied Chemistry*, p. 275.

[502] Berthelot, *Collection des Anciens Alchimistes Grecs.* Introduction, p. 73.

[503] Ibid., pp. 80, 279.

[504] Partington, *Origins and Development of Applied Chemistry*, p. 278.

[505] Herodotus, *Histories* I, 181 f, gives a vivid description of the ritual as compares with similar practises in Greece and Lycia in Asia Minor.

[506] This was originally a chthonic ritual celebrating the meeting in the underworld of the Goddess Earth with her spouse and it is resembled in the labyrinth theme of the Minoan Mycenaean religion where the sacred marriage takes place after the descent into the

would be performed on carefully selected dates, due to the development of Babylonian astrology and the knowledge gained from astrological observations, which probably were made from the top of the ziggurats.

An example of a simple ziggurat is the White Temple of Ur which was built in 2350 BC. The ziggurat itself is the base on which the White Temple is set. Its purpose was to get the temple closer to the heavens, and to provide access from the ground to it via steps.

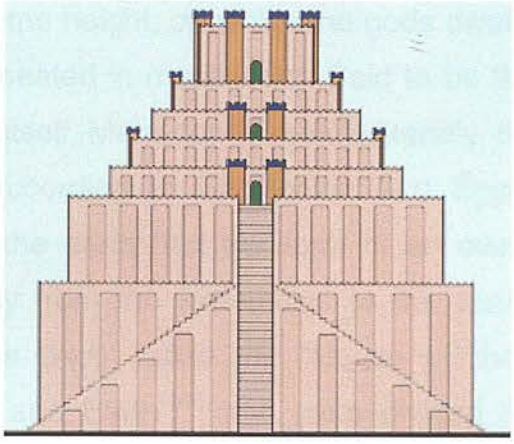

Figure 28. Reconstruction of Etemenaki Ziggurat according to Hansjörg Schmid, *Der Tempelturm Etemenanki in Babylon* (1995 Mainz)

Another example of an extensive and massive ziggurat is the Marduk ziggurat, or Etemenanki[507], of ancient Babylon. Unfortunately, not much of even the base is left of this massive structure, yet archaeological findings and historical accounts put this tower at seven multicoloured tiers, topped with a temple of exquisite proportions. The temple is thought to have been painted and maintained in an indigo colour, matching the tops of the tiers. Etemenanki, the name for this structure, is Sumerian and means "The Foundation of Heaven and Earth." Most likely built by Hammurabi, the ziggurat's core was found to have contained the remains of earlier ziggurats and structures. The final stage consisted of a 15m hardened brick encasement constructed by King Nebuchadnezzar. This ziggurat, according to a Greek text and an Assyrian inscription, was considered to be the grave of Marduk[508].

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labyrinth. For the ritual see Levy, *The Gate of Horn: A study of the religious conceptions of the Stone Age and their influence upon European thought*, pp. 104, 170.

[507] Frankfort, *The art and architecture of the ancient Orient*, p. 203.

[508] Levy, *The Gate of Horn: A study of the religious conceptions of the Stone Age and their influence upon European thought*, p. 171.

In Sumerian, ziggurat means "the mountain house" or "link between heaven and earth"[509]. The word is derived from *ziqqurratu*, which can be translated as a "rising building" (Akkadian *zaqâru*, "to rise high"). It has been widely recognized that the ziggurat is not just an imitation but a man-made sacred mountain[510].

The idea of a sacred mountain is ancient and prominent in Eastern cosmological thought. Mount Meru[511] was for the Indian Hindu "the mountain, of supreme height, on which the gods dwell, or the mountain on which Shiva is ever seated in meditation". Said to be the centre of the world, supporting heaven itself, Meru-danda means literally, the spinal column[512].

According to Babylonian and Egyptian cosmology, (as mentioned above) the earth had the form of an overturned boat, a kufah, so it rose gradually from the extremities to the centre like a great mountain[513]. The ziggurats were called the "House of the mountain" the "Bond between heaven and Earth"[514] and were divided into seven zones resembling the imaginary form of the seven spheres of heaven and earth. The ziggurat was not intended to resemble but to be the "mountain" and was attributed with multivalent significance[515]. According to Frankfort, "it stood for the whole earth, and within it therefore was concentrated the mysterious powers of life which bring forth vegetation"[516]. The formation of a ziggurat in stages was also ordained by structural purposes apart from symbolic; it would be impossible with the materials available to construct such a tall building in another form.

Another property of the square plan of these towers was its orientation by the direction of the sides of the temple "coextensive with the earth and founded upon the Abyss"[517], each facing towards one of the four cardinal

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[509] Partington, *Origins and Development of Applied Chemistry*, p. 273. It gives many bibliographical references.
[510] Frankfort, *The art and architecture of the ancient Orient*, p. 20. The ziggurat is described as an "artificial mountain".
[511] Juan Eduardo Cirlot, *Diccionario de simbolos* (Barcelona: Editorial Labor, S. A., 1992).
[512] Sanskrit-English Dictionary: Etymologically and Philologically Arranged with Special Reference to Cognate Indo-European Languages by K.C.I. Monier Williams, E. Leumann, C. Cappeller (Editors), (Oxford, 1899).
[513] Maspero, *The dawn of Civilization. Egypt and Chaldaea*, pp. 16, 543, 675.
[514] Burrows, "Some Cosmological Patterns in Babylonian Religion," pp. 46, 47, 50.
[515] Jean Chevalier and Alain Gheerbrand, *A Dictionary of Symbols*, trans. John Buchanan-Brown (Paris: Penguin Books, 1996).
[516] Frankfort, *The art and architecture of the ancient Orient*, p. 22.
[517] Levy, *The Gate of Horn: A study of the religious conceptions of the Stone Age and their influence upon European thought*, p. 170.

points[518]. For the Mesopotamian people, this function would also have had an added cosmological significance combined with the perception that the upward direction, which the ziggurat indicated, was a path connecting the heavens to the earth or to be more precise, the temple was a gate leading to a path enabling the earth's existential reality to reach the homologous reality of the heavens where the gods dwelt.

One of the most interesting construction features about the ziggurat is the so-called weeper hole. Weeper holes were small gaps that were left between the brickwork on the sides of the ziggurat. The purpose of such holes could have been to allow evaporation of water from the core of the structure, but most likely they would have been used for vocation to the underworld deities. The weeper holes were lined with baked bricks. A vertical drain was built on either side of the ziggurat to carry away rainwater. The drains were also made using baked bricks. This architectural feature confirms the chthonic character of the rituals and reinforces the connection with the regenerating powers of the earth[519].

To summarise, it has been established that the ziggurat was a symbolic representation of the primeval mound upon which the universe had supposedly been founded. Moreover, the ziggurats were built as a bridge between heaven, the earth and the underworld[520]. The temples of the Sumerians were believed to have been a cosmic axis, a perpendicular bond between heaven and earth, and the earth and the underworld, and a horizontal bond between the lands. Usually built on seven levels, the ziggurat represented seven heavens and planes of existence, which were later connected with the seven planets and the seven metals associated with them and their corresponding colours[521].

The influence of the Babylonian cosmological patterns

The Sumerian model of the cosmos consisting of seven superimposed heavens was transmitted from the Babylonians to the Hebrews and Greeks and it is also reflected in the Mithraic cult as the "ladder of Mithras", the seven-gate ladder of seven different metals by which souls ascend and

[518] Maspero, *The dawn of Civilization. Egypt and Chaldaea*, p. 630.
[519] Burrows, "Some Cosmological Patterns in Babylonian Religion," pp. 50-51.
[520] Ibid., p. 50.
[521] Partington, *Origins and Development of Applied Chemistry*, p. 274.

descend[522]. The seven-ranged ladder of the Mithraic[523] initiation rites is named «κλίμαξ επτάπυλος» by church father Origen[524] (third century AD).

Figure 29. Women celebrating the Adonia, festival of Adonis. Fragment of an Attic red-figure lebes gamikos (wedding vase), ca. 430-420, Museum of Louvre Paris

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[522] Jeremias, *The Old Testament in the light of the ancient East. Manual of Biblical archaeology.*, vol. 2, p. 56.

[523] The process of Mithraic initiation required the symbolic climbing of a ceremonial ladder with seven rungs, each made of a different metal to symbolize the seven known celestial bodies. By symbolically ascending this ceremonial ladder through successive initiations, the neophyte could proceed through the seven levels of heaven.
David Ulansey, *The Origins of the Mithraic Mysteries*, paperback, 1991 ed. (New York: Oxford University Press, 1989), p. 18.

[524] Origen, *Contra Celsum*, vi, CHAP. XXII. (Roberts-Donaldson English translation from http://www.earlychristianwritings.com/origen.html
After this, Celsus, desiring to exhibit his learning in his treatise against us, quotes also certain Persian mysteries, where he says: "These things are obscurely hinted at in the accounts of the Persians, and especially in the mysteries of Mithras, which are celebrated amongst them. For in the latter there is a representation of the two heavenly revolutions,--of the movement, viz., of the fixed stars, and of that which take place among the planets, and of the passage of the soul through these. The representation is of the following nature: There is a ladder with lofty gates, and on the top of it an eighth gate. The first gate consists of lead, the second of tin, the third of copper, the fourth of iron, the fifth of a mixture of metals, the sixth of silver, and the seventh of gold. The first gate they assign to Saturn, indicating by the 'lead' the slowness of this star; the second to Venus, comparing her to the splendour and softness of tin; the third to Jupiter, being firm and solid; the fourth to Mercury, for both Mercury and iron are fit to endure all things, and are money-making and laborious; the fifth to Mars, because, being composed of a mixture of metals, it is varied and unequal; the sixth, of silver, to the Moon; the seventh, of gold, to the Sun,--thus imitating the different colours of the two latter." He next proceeds to examine the reason of the stars being arranged in this order, which is symbolized by the names of the rest of matter.

In Greek religious and cosmological thought, the ladder is the symbol of "exceptional linking of the Earth Below and the Sun Above" and this is proved by the fact that it is the central feature in the vase paintings illustrating the Adonia[525]. The celebrations in honour of Adonis were performed by women growing gardens on their terraces in an attempt to re-establish the union between earth and the heavens (Figure 29).

In Genesis, the idea of a ladder connecting heaven and earth occurs also in the story of "Jacob's ladder"[526]. According to Genesis Jacob had a dream in which God promised him and his descendants the land where he was lying and when he got up early in the morning, he "took the stone that he had placed under his head. He stood it up as a pillar and poured oil on top of it. He named the place God's Temple (*Beth El*)"[527]. According to some authorities, Jacob was lying on the place of the Holy of Holies in Jerusalem where the Temple would be built later by Solomon. The story is a counterpart to the Babylonian pattern, shifting the "Gate of Heaven" from Babylon to Jerusalem[528].

Jeremias interprets the steps leading upwards as the "seven stages of the planet heavens leading to the highest heaven" as the "gate to heaven" of the Babylonians (*bab-ili)* and the place of the dream where the pillar stands as the celestial point (pole) of the earth from where the Ascent was to be made[529]. The pillar is described as the "stone upon which the world is founded, it is its centre" like Babylon (gate of heaven) is the centre of the world, the parallel of the *μεσομφαλία γαίας* or *ομφαλός* of the Greeks in Delphi[530] was also considered to be the centre of the world and the navel of the earth[531].

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[525] Marcel Detienne, *The gardens of Adonis: Spices in Greek Mythology*, ed. John Mepham, trans. Janet Lloyd, *European Philosophy and the Human Studies* (London: The Harvester Press, 1977), p. 97.
[526] Genesis 28:12 "He had a vision in a dream. A ladder was standing on the ground, and its top reached up toward heaven. God's angels were going up and down on it".
[527] Genesis 28:18 and 28:19.
[528] Burrows, "Some Cosmological Patterns in Babylonian Religion," p. 53.
[529] Jeremias, *The Old Testament in the light of the ancient East. Manual of Biblical archaeology.*, vol. 2, pp. 53-55.
[530] H. W. Parke and D.E.W. Wormell, *The Delfic Oracle*, vol. I History (Oxford: Basil Blackwell, 1956), p. 1.
[531] Mircea Eliade, *Images and Symbols. Studies in Religious Symbolism* (Princeton N.J.: Princeton University Press, 1991), pp. 42-43.

The tower of Babel

According to the narrative in Genesis[532], the tower of Babel was built by a united humanity in order to reach the heavens. To prevent the project from succeeding (because their actions were a result of their pride), god confused their languages so that each spoke a different language, they could no longer communicate with one another and the work could not proceed. After that time, people moved away to different parts of the earth. The story is used to explain the existence of many different languages and races, but mainly to indicate the arrogance of humans against god.

The "tower of Babel"[533] mentioned in the Bible alludes to the most famous ziggurat, the Etemenanki of Babylon. The word "Babel" is composed of two words, "bab" meaning "gate" and "el," "god"; hence, "the gate of god." As mentioned above, according to the Babylonian creation epic Enuma Elish, the god Marduk defended the other gods against the diabolical monster Tiamat. After he had killed it, he brought order to the cosmos, built the Esagila sanctuary (around which Babylon was later developed), placed at the centre of the newly formed world, and only then did he created mankind. The Etemenanki was next to the Esagila, and this reinforces the conception that the temple tower was erected at the centre of the world, as the axis of the universe[534]. It was at this spot that the Babylonians and before them, the Assyrians, perceived the existence of a straight line connecting earth with heaven. This perception is characteristic of Babylonian cosmology and is echoed in the biblical story, where the builders say "let us build a tower whose top may reach unto heaven".

The biblical account of the tower of Babel, as stated above has been based most probably on recollections of Mesopotamian ziggurats. They represented the polytheistic religions and they had to be condemned by

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[532] The story is found in Genesis 11:1-9.

[533] Wilfried Spiegel, ed., *Der Turmbau Zu Babel. Ursprung und Vielfalt Von Sprache Und Schrift*, 4 vols., vol. 1 (Graz: Kunsthistorischen Museums Wien, 2003). It was published as a catalogue for the exhibition on Babel tower that took place in Schloss Eggenberg from the 5th of April till the 5th of October 2003 and includes a complete collection of representations of Babel tower, historical information and bibliography.

[534] Eric Voegelin, "The cosmological order of Middle East," in *Order and History*, ed. Eric Voegelin (Baton Rouge. Louisiana State University, 1956).

Jewish monotheism. The Mesopotamian traditional desire of the human to ascend to the heavens, encounter divinity and transmit divine power back to earth, was depicted in the Bible as human arrogance. The Tower of Babel became synonymous with the attempt of humans to confront and defeat God by uniting their efforts and their skills in building an enormous structure, a tower[535] and thus "a strong political organisation"[536] which could also be identified with a city (polis)[537]. The city is the main presupposition of civilization and it was understood by the nomadic Jews as a threat to their traditions, their culture and their religion (Cain is the builder of the first city). That is the reason that in the Bible, Yahweh (the Jewish God) brings confusion by mixing up their languages and scatters them around the earth.

The biblical story describes quite accurately the function of the tower or the ziggurats as a temple connecting heaven with earth. The humans are trying through their cult to reach the gods so that the powers of the gods could also be transmitted downwards as blessing. The presence of the tower also, in a horizontal earthen level, could stabilize, unify and empower society's bonds[538].

It is timely to return at this point to Ezekiel's allegory about "the ship of "Tyre"[539], which is used as "symbol for Chaldea; her cargo is a symbol of the institutions of the priesthood and princedom of Judah which Babylon was profaned; and her doom[540] is the doom of Babylon herself" [541]. But what kind of goods would this ship-city carry?[542] Its cargo was chiefly made up of the metals of tabernacle, temple and royal guard, which were gold and silver.

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[535] See in Genesis 11: 5, "Come, let us build ourselves a city and a tower with its top in the heavens, and let us make ourselves a name, lest we be scattered upon the face of the entire earth. And the Lord descended to see the city and the tower that the sons of man had built."
[536] Voegelin, "The cosmological order of Middle East," p. 303.
[537] Nicolas Wyatt, *Space and Time in the Religious Life of the Near East* (Sheffield: Sheffield Academic Press Ltd, 2001). Also in Mumford, *The City in History*.
[538] Wyatt, *Space and Time in the Religious Life of the Near East*.
[539] Ezekiel 26:3-4, "Now, Tyre, I set myself against you. I mean to cause many nations to surge against you like the sea and its waves. They will destroy the walls of Tyre, they will demolish her towers." "Tyre, you used to say: I am a ship." (Ez. 27:1-3).
[540] Ezekiel 27-26-27. "The east wind has shattered you, surrounded by the seas. Your riches, your goods, your cargo, your crew, your sailors, your caulkers, your commercial agents, all the soldiers you carry with you, the whole host who are aboard; all will sink surrounded by the seas on the day of your shipwreck."
[541] Schoff, *The ship "Tyre" : a symbol of the fate of conquerors as prophesised by Isaiah, Ezekiel and John and fulfilled at Nineveh, Babylon and Rome: a study in the commerce of the Bible.*
[542] "Tarshish was your client, profiting from your abundant wealth. People paid you in silver and iron, tin and lead for your merchandise. Javan, Tubal and Meschech traded with you. For your merchandise they bartered men and bronze implements. The people of Beth-

The city of Tyre was the most prominent Phoenician city in antiquity. It was formed on an island which was very close to the coast of Lebanon[543] and it was the most famous walled city of its time. Tyre was an island fortress[544] and the Phoenicians were also the best known traders around the Mediterranean until the eighth century BC at least. It is not surprising that the city would be described metaphorically as a ship, a merchant ship but also an exemplary ship, as in Ezekiel[545].

Nuraghe in Sardinia

Other structures that have been characterised as towers and exist in the Mediterranean area and which were built before the Greek ones, have been located in Sardinia.

The nuraghe are round towers that are found in Sardinia, estimated to have been built around 1500 BC[546]. The ruins of more than 6,000 have been recorded on this island which is known from antiquity for its mineral resources[547]. They are mentioned in a text attributed to Aristotle, with the words "beautiful edifices, with vaults heighten the effect of their fine proportions, disposed in true Greek style, are stated to exist in Sardinia"[548]

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togarmah traded you horses chargers, mules. The sons of Dedan traded with you; many shores were your clients; you were paid in ivory tuskes and ebony. Edom was your client, because of the variety and quanity of your goods; she exchanged carbuncles, purple embroideries, fine linen, coral and rubies against your goods. Judah and the land of Israel also traded with you, supplying you with corn from Minnith, wax, honey, tallow and balm. Damascus was your client, because of the plentiful ness of your goods and immensity of your wealth, furnishing you with wine from Helbon and wool from Zahar. Dan and Javan, from Uzal onwards, supplied you with wrought iron, cassia and calamus in exchange for your goods. Dedan traded with you in horse-clothes. Arabia and even the sheikhs of Kedar were all your clients; they paid in lambs, rams and he-goats. The merchants of Sheba and Raamah trade with you; they supplied you with the best quality spices, precious stones and gold against your goods. Haran, Canneh and Eden, traders of Sheba, Asshur and Chilmad traded with you. They traded rich clothes, embroidered and purple cloaks, multi-colored materials and strong plaited cords in your markets. The ships of Tarshish crossed the seas for your trade." "Then you were rich and glorious, surrounded by the seas" (Ez.27:25).

[543] Wyatt, *Space and Time in the Religious Life of the Near East.*

[544] It was joined to the mainland during the siege by Alexander the Great in 332 BC

[545] Ezekiel 28:2 (the King of Tyre speaks):
I am El
I dwell in the dwelling place of the gods
In the heart of the sea...

[546] David Trump, *Nuraghe Noeddos and the Bonn Ighinn Valley: Excavation and Survey in Sardinia* (Oxford: Oxbow Books in assosiation with the Ministero peri i Beni Culturali e Ambientali, 1990), pp. 41-51. The dating has been confirmed by carbon radio-analysis.

[547] Ibid., p. 3.

[548] Περί θαυμασίων ακουσμάτων, 100, reference given in Georges Perrot and Charles Chipiez, *History of Art in Sardinia, Judaea, Syria and Asia Minor*, trans. I. Conino, 2 vols., vol. 1 (London: Chapman and Hall Limited, 1890), p. 44.

crediting Iolaos, the grandson of Hercules, as their founder. Diodorus Siculus[549] also mentions the Sardinian structures and he attributes them to Daedalus, the architect of the labyrinth, who according to the legend, fled to Sardinia, under the protection of Iolaos, after he escaped from the palace of Minos in Crete.

Figure 30. Nuraghe of St. Barbara in Macomer Sardinia

The Nuraghe also attracted the interest of many travellers in the eighteenth and nineteenth centuries who gave detailed descriptions and speculated about their original purposes[550].

These towers were built of large cut stone blocks of different size, laid without mortar, forming walls with an inward inclination, narrowing towards the top and terminating in a terrace. The masonry of these towers is characterised as Cyclopean[551]. There is an entrance on the ground floor, leading, in most cases, to a room covered by a vaulted roof with corbelled stonework and a staircase winding round the inner structure[552]. Systematic research has proved that their interiors were usually formed with three or

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[549] Diodorus Siculus, *Library*, book IV. xxx, I.
[550] Douglas Goldring, *Sardinia. The island of the Nuraghi* (London, Bombay: 1930), pp. 76-79.
[551] For an attempt to define the term "cyclopean" masonry by comparison with megalithic see in Glyn Edmund Daniel, *The Megalith Builders of Western Europe* (London: 1958), p. 18. "Both, admittedly, use large stones, but it is convenient to use the term cyclopean architecture where the large slabs are placed one on top of the other as in the *navetas* of the Balearics, the *nuraghe* of Sardinia, or the walls of Tarragona, for example[...] Both megalithic and cyclopean architecture differ in detail from the stone-work of the great Aegean tholoi which is chisel dressed and sometimes saw-cut."
[552] Perrot and Chipiez, *History of Art in Sardinia, Judaea, Syria and Asia Minor*, pp. 22-26, fig. 10-17.

more niches that displayed irregularities in plan and their masonry was not always consistent, varying from cyclopean with polygonal boulders, to coursed, rectangular blocks[553].

The oldest and once most widely accepted interpretation for their existence was that they were sepulchres[554]. Perrot instead, suggests that they were the counterpart to the Greek *pyrgos* of a family or tribe, comparing them with the towers in the peninsula of Mani in Peloponnesus, although the oldest extant only date back to the seventeenth century AD.

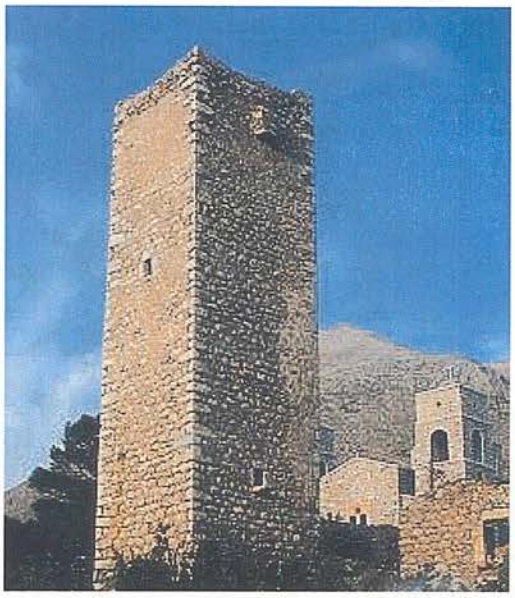

Figure 31. A typical tower in Areopoli Mani Greece

Another, more recent, suggestion about the origins of these magnificent structures is that they were social emblematic status symbols for the tribal chiefs, denoting a claim to land ownership and acting as territorial marks[555]. The discussion about their functions and their social significance "investigates relationships between monumentality and social praxis"[556] and involves other tower-structures like the Iron Age brochs in Scotland[557]. The most coherent approach is in proposing that they were probably functioning

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[553] Gary S. Webster, *A prehistory of Sardinia : 2300-500 BC*, ed. A. Bernard Knapp, vol. 5, *Monographs in Mediterranean Archaeology* (Sheffield: Sheffield Academic Press, 1996), pp. 95-96.
[554] Perrot and Chipiez, *History of Art in Sardinia, Judaea, Syria and Asia Minor*, p. 35.
[555] Trump, *Nuraghe Noeddos and the Bonn Ighinn Valley: Excavation and Survey in Sardinia*, p. 65.
[556] Davies, "Economic Geography of the Ancient Greek Countryside: A re-examination of monumental rural sites on the island of Siphnos" p. 231.
[557] Ian Armit, *Towers in the North. The brochs of Scotland* (Gloucestershire: Tempus, 2003). Also Michael Parker Pearson et al., *Between land and sea : excavations at Dun Vulan, South Uist*, vol. 3, *Sheffield Environmental and Archaeological Research Campaign in the Hebrides* (Sheffield: Sheffield Academic, 1999).

primarily as "fortified nuclear family farmsteads" while the most frequently alternatives cited are that they were public refuges, territorial markers, watchtowers or symbols of status and prestige[558].

There is also a definite connection with metallurgy as it is evident from the considerable number of bronze specimens and copper scoriae (the material that is produced when metal is separated from its ore during the process of smelting) that have been found in and around nuraghes.

An interesting feature is the presence of basalt stones surrounding the Tamuli Nuragh of a prism-like shape that "is very striking"[559].

FIG. 32.—The Tamuli Núragh and Giants Tombs. La Marmora. Plate III., fig. 1.

Figure 32. The basalt stones surrounding the Tamuli Nuragh from Perrot

Perrot also refers to large uncut stones around the areas of the Greek pyrgos in Mani and the nuraghe, naming them troughs because of a groove or cavity on the upper surface "varying from two to three, rarely more than 12 to 15 centimetres deep" which could be an indication of metallurgical workings even though their object has not been explained. The evidence for

[558] Webster, *A prehistory of Sardinia : 2300-500 BC*, p. 96.
[559] Perrot and Chipiez, *History of Art in Sardinia, Judaea, Syria and Asia Minor*, p. 43, n. 3,4, fig. 32.

the long distance trade of obsidian and metals in the Bronze Age between Sardinia and Phoenicians, Greeks, Cypriots and Etruscans is abundant[560].

Miscellaneous representations and images of towers

The qualities and properties of the architectural *eidos* of the tower are present and eligible in every representation or application of the form. Whether the tower is used as an icon, a metaphor or a symbol, the architectural properties can still be identified because they are inherent in the form. These architectural qualities not only are persistent in spite of the fact that the tower might not have been a building but a symbol, an icon or a rhetorical expression, they are also the source that supplies the tower with particular meaning, according to the intentions, culture and knowledge of the people at the time and place where it was used. Some paradigms are given in the following paragraphs in an attempt to illustrate this statement.

Nephthys

The Egyptian goddess Neb –Het who is better known with her Greek name Nephthys[561], is the daughter of Seb and Nout the second couple of the Ennead of Heliopolis. Seb is the god of the earth and Nout the goddess of heaven. Osiris, Isis and Seth are siblings of Nephthys.

Nephthys is depicted in Egyptian art as a woman carrying on her head the two hieroglyphics of her name, which mean "the Mistress of the Tower". The form of these hieroglyphics is a basket or a boat (neb) over a tower (het). The sign of het has also been used to describe that portion of the sky, which forms the abode of the Sun God Horus in the name Het-hert of Hathor, i.e. the "dwelling place of Horus".

Despite the fact she was considered from the earliest times the counterpart and wife of Seth who killed his brother Osiris, she is depicted as a loyal sister to Isis. She helped Isis to gather the scattered limbs of Osiris and revive the dead God. She has used her hair as bandages over the body and helped Isis to embalm their brother and grieve for him.

She is the tomb-dwelling goddess of death and sunset, the one that escorts and transmits the souls to the afterlife. She also escorts the new-born

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[560] Webster, *A prehistory of Sardinia : 2300-500 BC*, pp. 175-178.
[561] Donald B. Redford, ed., *The Ancient Gods Speak: a guide to Egyptian religion* (New York, Oxford: Oxford University Press, 2002).

children and as a comforter she stood at the birth bed. Isis was seen as the midwife. The two sisters are shown often together, only being able to be told apart by the hieroglyph on their heads. They are pictured as guardians of the dead on sarcophagus and coffin covers standing or kneeling and protecting the deceased with their open hands or wings[562]. Also like her sister, she was thought to have great magical powers – she was the Mighty One of Words of Power.

Figure 33. Nephthys kneeling on a stool with the shape of the hieroglyph for gold

Nephthys is usually depicted kneeling on a stool that has the shape of the hieroglyphic for gold[563]. The metal was sacred to a special goddess Nubt living in the underworld and identified with Hathor.

St. Barbara

In Christianity, the patron saint of metallurgy is Saint Barbara. She is very often depicted carrying a tower which is her sign of martyrdom. It seems that she was never a real person. Her legend is very old, having been recorded in Egypt from around the third century AD. Symeon Metaphrastes and the Latin version given by Mombritius make Heliopolis in Egypt the site of her

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[562] Ibid. p. 3."Kings in the after world depicted as babys nursed by a goddess, this ensures his sustenance and rejuvenation [...] crown goddesses give birth to him (the deseased king) anew everyday nurse him at their breasts and never wean him. Thus the king experiences a symbolic rejuvenation for all eternity."

[563] Partington, *Origins and Development of Applied Chemistry*, p. 25. The hieroglyphic sign for gold, as interpreted by Champollion and Lepsius, represented a bowl and a folded cloth, used for washing grains of gold from auriferous sand.

martyrdom[564]. The similarities with Nephthys continue in the patronage[565] of dying people and in their representation with feathers and wearing a crown[566].

Figure 34. St Barbara depicted with Tower and Crown

The name Barbara means the foreigner, the stranger (from Greek βάρβαρος) the barbarian, the one with the beard (Latin *barbus*). There are some icons of her with a beard[567] which grew out of her face when her father

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[564] Catholic Encyclopedia, Volume II, also available on line at the following address http://www.newadvent.org/cathen/02284d.htm

[565] www.catholic-forum.com/saints/saintb01.htm

Patronage of St Barbara

Against death by artillery; against explosions; against fire; against impenitence; against lightning; against mine collapse; against storms; ammunition magazines; ammunition workers; architects; armoures; artillery; artillerymen; boatmen; bomb technicians; brass workers; brewers; builders; carpenters; construction workers; dying people; explosives workers; fire; fire prevention; firefighters; fireworks; fireworks manufacturers; fortifications; founders; geologists; gravediggers; gunners; hat-makers; hatters; lightning; mariners; martyrs; masons; mathematicians; military engineers; milliners; miners; ordnance workers; prisoners; safety from storms; sailors; saltpeter workers; Santa Barbara, California; smelters; stone masons; stonecutters; storms; sudden death; Syria; Toa Alto, Puerto Rico; tillers; warehouses; watermen

Representation

cannon; chalice; host; princess in a tower with either the palm of martyrdom or chalice of happy death; woman holding a tower or feather; woman trampling a Saracen; palm of martyrdom; tower

[566] John Rylands Library Manchester, Latin MS 39, Horae, folio 151 recto, Flanders late fifteenth century, on vellum: Saint Barbara crowned with palm and book, in gold robe over blue.

[567] http://www.pedala.hr/eng/route/tzzz/k7_barbara/ Wooden Church of St. Barbara, Velika Mlaka, Zagreb, Croatia – The oldest part of the church dates back to 1642, which is the date carved into the covered entrance into the church, which was added on to in 1912. [..] On the outer sides of the wings are motives from the life of St. Barbara, while on the inner sides are

presented her a groom, (Saint Barbara, the *femme à barbe* or the bearded lady), which recall androgynous representations, that can be connected with metallurgical rites as will be demonstrated below.

She was imprisoned in a tower[568] by her father Dioscorus, who decided to build a bath for her next to her dwelling. When she changed the original plan and added one more window, making them three, her father realized that she had become a Christian and beheaded her with his sword. As he was leaving, a great bolt of lightning came from heaven and killed him[569]. Probably that is the reason she is sometimes depicted holding a bold of lightning and she is also considered to be the protector from a lightning strike.

Saint Barbara is very popular among the saints in the East and West and was venerated as early as the seventh century. She is the protector of artillery and miners and even though she has been demoted by the Catholic Church, she is still a dominant saint in the Orthodox churches and the patron saint of the army in Greece.

Another Christian saint connected with mining and towers is the Celtic St Peran the patron saint of Cornwall. According to his legend he came during a storm from Ireland[570]. St Peran gained the credit for discovering tin

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motives of the Passion of Christ. Particularly interesting is the painting of St. Kšmmernisse, a female saint with a beard, the patron saint of people in trouble. This painting is from 1759. Also interesting is the legend of the poor fiddler and the female saint with the beard. *«SOME OLD DEVON CHURCHES» BY JOHN STABB;*p 241-252 London, 1909 WHIMPLE. St. Mary. (7) saint carrying a lamb, St. John the Baptist; (8) female saint with pincers in her hand grasping a tooth, St. Apollonia. In the description, hung up in the church, No. 4 is given as St. Philip, and No. 7 as St. Agnes, but the tower is the emblem of St. Barbara, and No. 7 is certainly a male figure, as traces can be seen of a beard.

[568] Just as the story of St. Barbara recalls that of Danae confined by her father in a brazen tower. *Acta SS. Bollandiana apologeticis libris in unum volumen nunc primum contractis vindicata,* Antwerp, 1755, p. 370. From the book *The Legends of the Saints: An Introduction to Hagiography* From the French of Père Hippolyte. Delehaye, S.J., BollandistTranslated By V. M. Crawford, 1907 [Reprinted University of Notre Dame Press 1961 With an Introduction By Richard J. Schoeck]

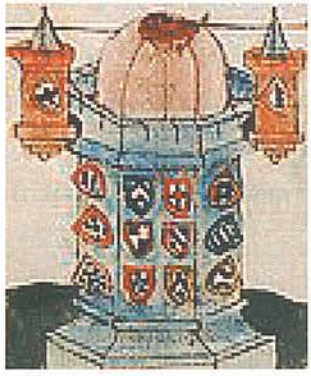
[569] For the most detailed account of St Barbara's martyrdom see the Orthodox Church version in http://www.saintbarbara.org/about/frp_stbarb.cfm

[570] http://www.an-daras.com/lp/origins.htm and http://www.britannia.com/bios/ebk/pirandm.html Although a real figure from the fifth century (born 480 AD), St Peran is surrounded by myth and legend that tell us as more about the generations of Cornish people that perpetuated his memory than the Saint himself. He is likely to have been an Irish Christian of noble stock was expelled from his homeland by a pagan chieftain because of his preaching. He landed on the shore of what is now the Parish of Perranzabuloe and fulfilled his destiny by setting up a Christian community in Cornwall and building one of the first chapels in Britain. Legend insists that he was thrown off the cliffs in Ireland with a millstone around his neck which miraculously carried him across the Celtic sea to Cornwall rather than dragging him to his death in the depths. In all probability this was in fact the small stone altar that Christian missionaries habitually carried in the Dark Ages.

in Cornwall even though the date of his birth is placed in the fourth century AD. The merchants of Tyre were probably trading with Cornwall for tin as early as the days of King Solomon. But according to the legend, it was Peran and St Agnes that set to work the ores. The fame of the discovery rapidly spread and even the cities of Tyre learned that a metal, precious to them, was to be obtained in a country far to the west. The Phoenician navigators were not long in finding out the "Tin Islands" known in ancient texts as Cassiterides. It was probably much later that the local people the rounds,--amongst which the Peran Round remains as a remarkable example[571].

But what was the meaning of the tower in Christian theology? The self-standing tower appears in the form of a bell-tower around the tenth century AD. A phrase from the "Song of Songs" which has been transferred to the Catholic main liturgy, the Litany of Loreto[572] and the Orthodox Akathistos Hymn, connects the tower with the Virgin Mary. The Mother of Christ is described as Turris Davidica and Turris Eburnea, meaning accordingly the "Tower of David"[573] and the "Ivory Tower"[574].

Figure 35. Symbols of Mary: Turris Davidica (Tower of David) UNKNOWN; Illustrator of 'Speculum humanae salvationis', Cologne, c. 1450



She is called the "Tower of *Ivory*", to suggest to us, by the brightness, purity, and exquisiteness of that material, how transcendent is the loveliness and the gentleness of the Mother of God[575].

[...] St Peran is high in the pantheon of Cornwall's saints and the patron saint of Cornish tin miners as well as the Duchy itself. He is supposed to have discovered tin by accidentally heating tin ore in a rock until it melted and ran to form a silver or white cross against the black background of the rock giving rise to the symbol that became the national flag for Cornwall. History does not support the idea of St Peran discovering tin but the whole story underlines the deeply rooted association between Tin, St Peran and the Cornish Identity. In fact St Peran' flag is possibly one of the oldest heraldic symbols in Europe and at some stage there was even a theory linking it with the Roman Legions and Ambrosius.

[571] Popular Romances of the West of England collected and edited by Robert Hunt [1903, 3rd edition]

[572] The litanies of Loreto, so called because of their use in the sanctuary of Loreto since 1531, were officially approved by Pope Sixtus V in 1587. The litany was influenced by the much older famous Orthodox *Akathistos Hymnos* first performed in Agia Sophia by the grateful populace of Constantinople in the seventh century when the Avars siege had ended.

[573] Song of Songs 4:4 "Thy neck is as the tower of David, which is built with bulwarks: a thousand bucklers hang upon it, all the armour of valiant men"

[574] Chevalier and Gheerbrand, *A Dictionary of Symbols.*

[575] John Henry Newman, Meditations and Devotions *Edited by Rev. W. P. Neville,* 1896, *accessible at http://www.*newmanreader*.org/works/meditations/index.html*

Mary is also called the Tower of David (the first tower that David build to declare and defend Jerusalem) because she fulfilled the mission of presenting the Son of God to this world and defending her son against his enemies.

The mother of Christ has been given, above anyone else, the prevailing gift of prayer, thus becoming the main intermediary figure between God and humans in the Christian religion.

Figure 36. Master of the Housebook c. 1490

The Holy Family with the Rose-bush **Drypoint (unique impression), Rijksmuseum, Amsterdam**

Almost every landscape detail in the etching above is a Marian symbol that features in one or more hymns to Mary. There is the church in the background, of course, but there is also a tower, the turris Davidica, and on the left, the gateway to Heaven, the porta coeli.

The most famous is the campanile designed by Giotto in Florence, which was erected next to the cathedral of Santa Maria de la Fiore in 1334. The religious meaning of "Giotto's tower" is certainly connected with the Virgin Mary. In much later interpretations it has been suggested that it was a symbol of the recently acquired power of the public and that it was built separate from the cathedral to demonstrate civic pride more effectively along with the tower of the Palazzo Vecchio[576].

[576] The most tangible triumph of the Florentine citizenry laid in the destruction of fifty nine Guelph (factions supporting the Papacy) towers after 1250 and in the law of 1324 who stipulated the dismantling of legally disarmed towers to the height of fifty braccia. In Marvin

Conclusions. The meaning

The above analysis of the different examples of towers, as structures, images, literal descriptions or symbols has revealed that for the cultures in the immediate vicinity of Siphnos, the form of the tower was used extensively and even more it seems, it was created to represent the most magnificent man-made edifice that also had a very definite and strong meaning in these cultural contexts.

From a horizontal point of view the ziggurat was a natural landmark and centre. Vertically it formed some sort of an approach to heaven, a link between heaven and earth at the centre of the world[577]. The temple is the cosmic mountain indicating the centre of the world in a symbolic representation of the cosmos, forming a "gate" and materializing as an *axis mundi* and a vertical passage from one cosmic region to the other[578]. It is conceived of as the bond of heaven and earth, the bond of the earth and underworld on a vertical level, and horizontally, a bond of the land or lands.

The towers provided also a "ladder" of descent for the gods to come down to earth. They exemplify the human desire to transcend the restraints of temporal existence and to restore contact between heaven and earth[579].

The ceremony of the "sacred marriage", re-enacting the primordial first marriage between the goddess Earth and Ouranos (the heavenly god), would bring the blessing of the gods by fertilizing the land and thus inaugurate the New Year. In Sumerian, Egyptian, Greek and Hebrew cosmogonies, heaven and earth[580] is the archetypical couple from which the cosmos and all life emerged. In all these cosmogonies the couple were violently separated by one of their sons and the tower was a man-made structure resembling the sacred mountain which could create a centre and through it a passage that would enable the re-enactment of the primordial coitus as the procreative act

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Trachtenberg, *The campanile of Florence Cathedral, "Giotto's Tower"* (New York: New York University Press, 1971).

[577] Burrows, "Some Cosmological Patterns in Babylonian Religion," p. 46. Burrows introduces the term "hierocentric realism".

[578] Eliade, *The Myth of the Eternal Return or, Cosmos and History*, pp. 13-15.

[579] This is an idea vividly illustrated in the vase paintings depicting the Adonia the festival performed in honor of Adonis. See above in p. 132.

[580] Sumerian An and Ki, the Greek Gaia and Ouranos, Egyptian Nut and Geb.

par excellence and thus would achieve the reconstruction of a meeting place of the three cosmic regions[581].

The ziggurats were also very powerful cosmic symbols of the centre and the cosmic axis (*axis mundi*), which would also give access to the underworld[582]. The cosmic axis connected the three regions: the underworld (the dead but without the kings included); the world of the living on earth; and the heavens where the gods and the dead kings would dwell. All the symbolism which derived from the sacred mountain[583] would be retained in the tower-temples the ziggurats, creating architecture "which imposed its form on the consciousness of Europe and Asia"[584]. As Campbell suggested, "undoubtedly the most striking symbolic features of the earliest high culture centres of both the Old World and the New were the great temple towers and pyramids rising high above the humble rooftops clustered around their bases"[585].

As the temple of Babylon was founded on the abyss becoming the beginning of creation and the centre of the cosmos, every temple after that would follow this "hierocentric" pattern[586]; the Delphic oracle in Greece is a well known example.

The construction of a man-made cosmic mountain presupposes advanced knowledge and technology and collaboration between different disciplines. The most magnificent temple, the one that King Solomon built in Jerusalem would never have been completed without the help of Hiram of Tyre. The way Hiram is described in the Old Testament[587] is reminiscent of Hephaestus or Daedalus in Greek mythology[588]. The Tyrrhenians provided Solomon with all the rare materials and technical knowledge that was required. The ships of Tyre were able to sail across the seas and bring back the most magnificent and rare timber, precious stones and metals. The

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[581] Eliade, *The Myth of the Eternal Return or, Cosmos and History*, p. 14.
[582] Levy, *The Gate of Horn: A study of the religious conceptions of the Stone Age and their influence upon European thought*, p. 168."...ziggurats represent the lost ancestral mountain, the mythical Mt. Mashu, co-existive with the earth, erected "in the place of fertility" over a vast hollow, the primeval cave where the dead dwell. [...] they may have covered a cave or tomb..."
[583] Chevalier and Gheerbrand, *A Dictionary of Symbols.*
[584] Levy, *The Gate of Horn: A study of the religious conceptions of the Stone Age and their influence upon European thought*, pp. 169-170.
[585] Joseph Campbell, *The Mythic Image* (Princeton: Princeton University Press, 1974), p. 76.
[586] Burrows, "Some Cosmological Patterns in Babylonian Religion," pp. 50-51.
[587] 1 Kings 7:13-14.
[588] Chevalier and Gheerbrand, *A Dictionary of Symbols.*

Tyrrhenians were famous merchants, sea-travellers, and masons[589]. They were also the legendary metallurgists who spread their knowledge in Greece, and this is reflected in the myth of Telchines[590] who went to Rhodes, according to Greek mythology, and in the myth of Kadmus, brother of Europa (who also comes from Phoenicia) and the founder of "the seven-gated city of Thebes"[591] in Boeotia.

The Sumerians, like most ancient peoples "regarded the whole cosmos as pervaded by a single life"[592] and their understanding of the world is that "what is above is below". The stages of the tower correspond to the levels of the ranges of the upper world. Accordingly, the earthly order corresponds to the heavenly. The priest king governs his domain which is a miniature, a reflection of the cosmos, as a representative of the godhead. This Sumerian concept of perceiving the graded stages of the towering ziggurats as a form of universal manifestation of the divinity, which also corresponds to the grades of human hierarchy, "survived through many transformations of myths and monuments...to modern times"[593].

The towers that preceded the Greek towers in the wider Mediterranean area present a diversity of uses. However, they seem to share a homologous understanding of their function as reference points and thus powerful symbols of a centre; they have a defensive or protective character, protecting the living and/or the dead; and they are perceived as a passage between the threefold worlds, a gate through which mortals and divinities would pass.

It will be argued in this thesis that this common understanding of the properties of the tower is revealing of the essences, the qualities of that

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[589] Schoff, *The ship "Tyre" : a symbol of the fate of conquerors as prophesised by Isaiah, Ezekiel and John and fulfilled at Nineveh, Babylon and Rome: a study in the commerce of the Bible.*, passim, p. 59.

[590] Telchines was a mythical genus that in ancient times migrated from Crete, via Cyprus, to Rhodos. They were regarded as the ones who reared Poseidon, and were particularly skilled in metallurgy. They were occasionally identified with the Cyclops, Dactyls or Kouretes. They were said to have been destroyed by the flood. They were skilled metal workers in brass and iron, and made a trident for Poseidon and a Sickle for Cronos, both ceremonial weapons. They could bring about hailstorms, snow, and rain at will, and produced a mixture of stygian water and sulphur, which killed animals and plants. Their habits has been variously given on most of the islands of the Eastern Mediterranean, but this may perhaps be due to the desire of the Greeks to include them into their own mythology. Extended bibliography is given below in the Chapter 6.

[591] Hesiod, *The Homeric Hymns and Homerica. Works and Days.*

[592] Jeremias, *The Old Testament in the light of the ancient East. Manual of Biblical archaeology.*

[593] Campbell, *The Mythic Image*, p. 87.

particular architectural *eidos* and it is these identical architectural qualities present in every tower that are attributed with a significance that is connected to the cultural and historical context of the people who created or subsequently used them.

Analysis of the architectural qualities of the tower or the eidetic properties of the tower

The aim of the preceding analysis was to seek to identify the invariant elements and the invariable interconnections that pervade all the above phenomena in order to construe their essence and interpret their meaning[594]. These elements and relationships, which are invariant in all towers, are in direct correspondence with the architectural qualities of the tower, as these emerge from the architectural analysis, based on purely phenomenological principles.

The tower creates and gives meaning to space, transforming it into a defined place with distinct spatial and conceptual qualities. The presence of a tower in a landscape creates a definite reference point in space and becomes a landmark, a particular and distinct point, the absolute definition of *topos* or place[595]. The form of the tower is so dominant and unmistakably intentional (its form is against the law of gravity and entropy -in an analogy) that it was adapted by the Mesopotamians to describe the very first creation of El –the first God- which was a "high edifice". El defeated Apsu (the Abyss or Chaos) "by measuring it" and thus enclosed chaos in a container. On the opening or the entrance to it, El built a magnificent high building to seal the gate to the Abyss and to commemorate his victory. The tower has been used as the strongest manifestation of a statement because it is an inevitable reference point which transforms space into an ordered and hierarchical place.

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[594] Marcel Mauss, *Sociologie et anthropologie*, 5e ed., *Sociologie d'aujourd'hui* (Presses Universitaires de France, 1973), p. 43.

[595] "That the point is a unit by which place, and still other regions of space, can be conceived and even experienced has been of perennial interest", in Casey, *A Philosophical History*, pp. 65 ff., where there is also a very interesting discussion about point–place-space. On this subject there is also an essay by Derrida in Jacques Derrida, "Ousia and Gramme," in *Margins of philosophy* (Brighton: Harvester Press, 1982), pp. 41-42.

This inherent architectural quality attributes to the tower allusions of power, authority and defence. These allusions by no means determine the tower itself[596], but they are intended readings of the architectural form, depending on the cultural and historical context of their interpretation.

Another quality inherent in the architecture of the tower is surveillance over its surroundings. This enables the person gazing from the tower to have overall control over an area, supervising and observing everything from a superior point of view, an impressive experience that changes completely the feeling for life, the possibility of satisfying the delight in looking, coupled with the deeper meaning of obtaining an overview and an insight. Again, this quality has led to interpretations of the tower as an authoritarian, despotic and even a tyrannical building. Another use the structure has acquired because of the above property is as an observatory for astronomy, a watchtower for supervision over a territory and as a signal-tower for communication, usually forming a network with other towers. However, the understanding of this initial and basic architectural quality of surveillance is constrained by the limitations or the needs of a particular social, cultural and historical context.

The transition from a position outside, on the periphery, by reference to the tower, to the state of having surveillance and supervision over everything, by being on the top of the tower, requires and presupposes the passage through the tower in the course of a usually narrow and twisting stairway, ascending -or descending- on a bipolar vertical helix that constantly changes direction. This transferring and transforming of a passage is another inherent architectural quality of the tower. The upward journey away from the earth, offering a constantly expanding horizon, is possible through the tower. It is evident to the senses and the mind, even before obtaining any cultural meaning. Historically and culturally, it has been interpreted as the axis connecting the three cosmic regions (the heavens, earth and underworld or chthonian), as the manifestation of a certain hierarchy or as the inner journey of introspection[597].

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[596] The sign exceeds its interpretation according to the phenomenology theory see in Merleau-Ponty, *Signes*, p. 144. (Greek edition).

[597] C. G. Jung built his own round tower to dwell as a "...place of maturation- a maternal womb" a "representation of the individuation process" and towards the end of his life he added another storey as a declaration of his further development, "an extension of consciousness achieved in old age" according to his own words in his work Carl Gustav

These architectural qualities are the cord, the spine on which added meaning is attributed, according to the intentions of the interpreters. These "interpreters" range in each and every case from the creators, that is, the architects who are responsible for the original purpose of the structure, to the users and visitors throughout its historical existence, who apply each time their own meaning and function to the building.

The tower remains an architectural subject and retains its properties exactly because and in spite of the fact that it is used as a temple, tomb, castle, lighthouse, belfry etc., as a religious or national symbol, as a metaphor in literature and speech, or an "archetype", found in fairy tales and also in the discipline of psychology.

In this investigation's methodology, the search for the original purpose of the towers in Siphnos presupposes the identification of their initial architects or creators and inevitably requires the reconstruction and understanding of their cultural context. It is within this cultural context that the invariant architectural qualities of the tower would have been employed to serve the intentions and purposes compatible with the concepts and requirements of a precise time and in an exact place.

The research has presented an analysis of the cultural context of Siphnos, an island which belongs to the Cyclades complex. The analysis will continue in the next chapter focusing on the religious material known from Siphnos on the period when the towers were constructed, from the sixth century to the fourth century BC, in an attempt to give Siphnian towers religious content in conection with mining.

The investigation aims to present a reconstruction of the social, political, religious, economic, and technological concepts and practices of the time when the architecture of the towers would have been applied, in order to express particular ideas and to serve specific intentions.

Jung, *Memories, dreams, reflections / recorded and edited by Aniela Jaffe*, trans. Richard and Clara Winston (New York: Random House/Vintage, 1963). Reference cited in Theodore Ziolkowski, *The View from the Tower : Origins of an Antimodernist Image* (Princeton, New Jersey: Princeton University Press, 1998), p. 42.

CHAPTER 6

The religious context of Siphnos during the Archaic and Classical period.

The purpose of the religious analysis is to identify beliefs, rituals, conceptions and practices that could be connected with the construction of the towers and/or metallurgy and more particularly the workings and practices of mining. It has been illustrated that the metals had a primal role in the formation and development of the economy, politics and the international status of Siphnos in antiquity. It can be presumed that it should be possible also to identify indications of their importance in the religious rituals performed and in the characteristics of the gods worshipped by the Siphnians. The reasons for the author's expectations from such an analysis of religion are based on the construal of the significance and place of religion in Greek society.

In the study of Greek religion, the analysis of the various myths and rituals reveals that many earlier customs were incorporated into the official state festivals of the archaic and classical periods, which can not be explained in relation to the worship of the Olympian Gods. The attempt to identify the meaning which certain myths and rituals had for the society that generated them can illuminate further certain aspects of the collective representations of these communities, which otherwise would be unidentifiable. The most prescient scholars have pointed out that this attempt has probably become obscured by our own contemporary cultural determinations[598].

Sociological and psychological aspects of religious rituals and myths have been examined by researchers in accordance with the historical development of social forms and physic functions[599]. As a result of the concept that the most legitimate way to explain [Greek] religion and ritual is in psychological terms, most historians relegate religion and ritual to a chapter

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[598] Christiane Sourvinou-Inwood, *Hylas, the Nymphs, Dionysos and Others. Myth, Ritual, Ethnicity*, ed. Dr. Brita Alroth, vol. XIX, *Acta Instituti Arheniensis Regni Sueciae 8°* (Upsala: Svenska Institutet i Athen, 2005), p. 16.

[599] The sociological perspective is mainly represented by Jane Harrison, Louis Gernet and the Paris School of Jean Pierre Vernant. The psychological and intellectual by Lewis Farnell, E.R. Dodds, Walter F. Otto and Karl Kerenyi.

of its own, away from real events like the treatment of politics, economics and so on that are regarded as the major topics for historical analysis[600].

Others, like Burkert, consider that the investigation of representations, ideas and beliefs is a preliminary goal which has to be followed by their incorporation into a more comprehensive and functional context in order to become meaningful[601].

In this research, religious aspects are treated as meaningful containers that can reveal hidden connections that transcend ritual practices and sacred beliefs and can establish an ordered system of distinct concepts and understandings which have shaped the communities that created them and for which they had specific meaning, becoming a form of social coding for the individuals that shared them.

The concept of religion and the sacred in Ancient Greece in the Archaic and Classical periods

There has always been a very strong and identifiable social aspect of ancient Greek religion. The Greeks from antiquity up to the present day have been performing rituals and participating in cults as part of their social or communal (political) life. Yet, for the ancient Greeks, gathering together at these festivals and the practice of the ritual is "more than a casual encounter it is participation: ιερόν μετέχειν" it is about participating in the sacred[602]. The concept of the sacred was of great importance. The words used by the Greeks to describe the sacred was *hieron* and everything else was *hosion* meaning that "the sacred lies behind and one may feel pious and free at the same time"[603]. It has been recognised that "a division of the totality of perceived existence into sacred and secular realms" did not make any sense in Greek society[604]. The arbitrary division made by many scholars between "sacred" and "secular" would not have even been understood by the ancient Greeks for whom religious belief and secular action were blurred and there

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[600] Ian Morris, "Poetics of Power. The Interpretation of Ritual Action in Archaic Greece," in *Cultural Poetics in Archaic Greece*, ed. Leslie Kurke (New York, Oxford: Oxford University Press, 1998), p. 23.
[601] Burkert, *Greek Religion: Archaic and Classical*, Introduction.
[602] Ibid., p. 254.
[603] Ibid., p. 270.
[604] Emily Kearns, "Order, Interaction, Authority. Ways of looking at Greek religion," in *The Greek World*, ed. Anton Powell (London: Routledge, 1995), pp. 512-513.

was no need for such a distinction[605]. As Eliade summarizes, "the archaic world knows nothing of "profane" activities: every act has a definite meaning –hunting, fishing, agriculture; games, conflicts, sexuality- in some way participates in the sacred"[606].

Ritual sacrifices were the central events around which festivals, athletic games would take place, and the periodical practice of the rites was performed more as part of family tradition and obligation to the community than as an indication of deep personal religious belief. Religious events were performed to bring humans and gods together and at the same time, they served as the main occasion for members of one family, citizens of a city and Greeks as *ethnos*, a united nation to participate in festivals and rites (local or Pan-Hellenic) where their identity and their bonds were confirmed and reactivated[607]. The Greeks considered themselves as members of one religious group. They had common sanctuaries and rituals and that was one of the defining characteristics of their nationality as Hellenes, according to Herodotus (Histories, 8.144.2) along with the same language, the common ancestry and the same way of life[608].

That kind of understanding has not deprived religious events from having been considered sacred (sanctity); on the contrary, it has strengthened their importance and added to their meaning for the Greeks. This is quite evident from the fact that certain sanctuaries (Olympia, Delphi, Delos etc) became very important and had a strong effect on the political life[609] of the Greeks along with the rise of the autonomous Greek "city-state" which began from the Geometric period[610]. In the Archaic period, religion and society or the state, were not two separate entities for the Greeks but two closely related aspects of the same entity[611].

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[605] Morris, "Poetics of Power. The Interpretation of Ritual Action in Archaic Greece," p. 23.
[606] Eliade, *The Myth of the Eternal Return or, Cosmos and History*, pp. 27-28.
[607] A good introductory study to the subject even though outdated in Martin P. Nilsson, *Greek Popular Religion* (New York: Columbia University Press, 1940).
[608] Christiane Sourvinou-Inwood, "What is Polis Religion?," in *The Greek City. From Homer to Alexander*, ed. Simon Price (Oxford: Clarendon Press, 1990), p. 300.
[609] "The Greek city knows no separation between sacred and profane. Religion is present in all the different levels of social life, and all collective practices have a religious dimension" in Pauline Schmitt-Pantel, "Collective activities and the Political," in *The Greek City. From Homer to Alexander*, ed. Simon Price (Oxford: Clarendon Press, 1990), p. 200.
[610] Snodgrass, *Archaeology and the Rise of the Greek State*.
[611] Nilsson, *Greek Popular Religion*, p. 80. Also in Nilsson, *Cults, Myths, Oracles, and Politics in Ancient Greece. With two Appendices: the Ionian Phylae, The Phratries*, pp. 16-17.

In classical Greek states, worship of the cities' gods was maintained and promoted by the polis, as a matter of course[612]. The rural shrines that predated the rise of the polis were later incorporated within state institutions. Thus the rural sites preserved many of the elements of Mycenaean worship so together with the local community's way of life, they formed the chief surviving vehicles of Mycenaean concepts, and thus, continuing, into the classical period[613]. It has been repeatedly argued that there exists cumulative evidence to prove the continuity of Minoan-Mycenaean cult into the archaic and classical period of Greek religion[614].

The Homeric epics of the Iliad and Odyssey with their vivid descriptions of the personalities which Homer gave to the gods, have influenced deeply Greek religious consciousness and were responsible for the formation of the personalities of the twelve Olympians but also for many of the contradictions and complexities in the character of the Greek gods[615]. The memory of the properties of the gods that existed before Homer is evident in the complexity and sometimes inconsistency of the features and properties that are attributed to these gods.

The cult places before the late archaic period were groves, springs, caves with a simple altar of rough stones. Homer gives various descriptions about sacrifices which were performed at a spring beneath a plane tree and that votive gifts were suspended from the branches of the trees in the grove. It was during the Archaic period (seventh and sixth century BC) when a cult place became popular and was visited by many people and if the god received many gifts, then a small building was erected to house the idol or statue and offerings[616]. These were the first temples and most probably they were erected by the people communally.

The cult objects (idols, statues, and sacred stones like *Omphalos* etc) were not usually regarded as the actual divinity but as a sign of his

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[612] "The polis was the institutional authority that structured the universe and the divine world in a religious system, articulated a pantheon with certain particular configurations of divine personalities, and established a system of cults, particular rituals and sanctuaries, and a sacred calendar" in Sourvinou-Inwood, "What is Polis Religion?," p. 302.
[613] J. T. Hooker, "Linear B as a source for social history," in *The Greek World*, ed. Anton Powell (London and New York: Routledge, 1995), p. 22.
[614] Alex W. Persson, *The Religion of Greece in Prehistoric Times* (Berkeley and Los Angeles: University of California Press, 1942), p. 139.
[615] W. K. C. Guthrie, *The Greeks and their Gods* (London: Methuen & Co Ltd, 1950), p. 216.
[616] Nilsson, *Greek Popular Religion*, p. 81.

presence[617]. Unreasonableness of prayer offered to idols was noted by Heraclitus[618] and has been attributed to barbarian poverty and ignorance[619]. In Plato's *Cratylus,* Socrates makes a statement about the worship of planets and stars which indicates that the Greeks regarded worship of the heavenly objects as a feature of the barbarians[620]. The evidence from the depiction of cult scenes in Greek art, from as early as the Minoan signets up to the classical sculpture on the west pediment of the Parthenon with the anthropomorphic Sun god and Moon goddess, show that the heavenly bodies are represented as the cosmological framework of the scene (probably connected with cosmological myths) but there are no indications of a specific cult[621].

The invocation of the god under a particular name or an epithet indicated what sort of help the worshipper needed and a great part of the function of the oracles was to instruct the worshipper as to which deity and under what name he should pray[622].

It should be noted that the Greeks had almost no professional priests and most temples did not have any property or their own administration[623].

In several cases, the cult was under the care of a certain family, which probably was the family that owned the ground where the cult place was. The head of the family was also the priest of his house. On some occasions, official priests were called in, but their presence was not considered necessary and they were mainly advisers.

In Attica, about which our information is much better than other states of Greece, phratries or families were responsible for certain public cults and we may suppose that the same was true in most other Ionian places; for example, the Eleusinian mysteries[624] in Athens belonged to the

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[617] L. R. Farnell, *Cults of the Greek States*, 5 vols., vol. 2 (Oxford: Clarendon Press, 1896-1909), vol. 1, p. 15.
[618] In Clem. Alex. Protrept. Ibid., p. 21.
[619] Dio Chrysostomos. Or. 12 (Loeb Classical Library).
[620] Plato *Cratylous* 397 c-d. "...those gods in whom many foreigners believe today sun, moon, earth, stars, and sky. They saw that all these were always moving in their courses and running, and so they called them gods from this running nature".
[621] Nilsson, *The Minoan-Mycenaean Religion and its survival in Greek religion*, p. 420.
[622] Farnell, *Cults of the Greek States*, p. 35.
[623] Burkert, *Greek Religion: Archaic and Classical*, p. 95.
[624] The definition of mysteries as given in Walter Burkert, *Ancient Mystery Cults* (Cambridge Mass.: Harvard University Press, 1987), p. 11. "Mysteries were initiatory rituals of a

Eumolpidae family. It seems that a certain cult was characteristic of a certain family and priests and priestess were taken from certain noble, very old families or *gene* (γένη) even after the city had taken control of the cult[625] and the social reformation that took place during the rise of the Greek city-states[626].

Through ritual and the invocation of the gods, a basis for mutual understanding and trust between citizens was created. Plato acknowledged that in the foundation of the "ideal state" there should be a god, a daemon or a hero and sacred precincts that are appropriate to them, which can:

> "...provide a favourable opportunity for dealing with practical affairs and so that people may meet in friendship at sacrifices and become familiar and acquainted with one another, since nothing is of more benefit to the State than this mutual acquaintance; for where men conceal their ways one from another in darkness rather than light, there no man will ever rightly gain either his due honour or office, or the justice that is befitting."[627]

The rise of philosophy in the sixth century BC introduced *theologia.* Speaking about divinity and the concept of the divine transferred the mythical gods to a higher plane which was considered powerful and eternal. The concept of mind, *nous,* was introduced in theology by Xenophanes, who also suggested that "the ethics of the supreme power presupposes that God must be right" which had a great impact on the later philosophers[628]. The so-called natural philosophers developed their systems of comprehensive rational explanation of nature, but the sacred was never dismissed; on the contrary, it was employed in the form of the virtue of the divine that guides everything as "all human laws are nourished by one, the divine; for it rules as far as it will and is sufficient for all and remains superior"[629].

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voluntary, personal and secret character that aimed a change of mind through experience of the sacred."

[625] Information given by Aeschinus *Speeches* II, 14

[626] Snodgrass, *Archaeology and the Rise of the Greek State.*

[627] Plato, *Laws*, 5.738d-e

[628] An excellent treatise on the pre-Socratic philosophers and Xenophanes in Popper, *The World of Parmenides. Essays on the Presocratic Enlightenment*, pp. 33-67.

[629] Heraclitus, reference from Burkert, *Greek Religion: Archaic and Classical*, p. 309.

The Phratries

The social structure of Greece shifted from the centralized monarchies of the Mycenaean period[630] to "smaller and at times more mobile units, each dominated by an aristocrat and his family". Until the eighth century BC, these families or even larger groups were ruled by a *basileus* who was not a king but more a chieftain or the head of a clan[631]. These units were responsible for the "phenomenon of the city-state" and they survived into historical times in the structure of the cities known as the *phratries*. The Mycenaean title of *basileus*[632] (regarded in Linear B tablets as the chief of metallurgic clans) also survived as the title of one of the elected archons of Athens who was attributed with important religious and political duties[633].

Phratries were very old [634]organisations with social and religious character. They were brotherhoods of kinship not necessarily by blood relation (pseudo-kinship groups)[635] more flexible structurally than demes, where the "principle of natural community, in particular community of kinship and shared home location, was of fundamental importance"[636]. It was a social unit common among Ionians, whether in Ionia, Athens or Cyclades as it is indicated by Herodotus (*Histories* 1.147.2). The existence of the phratries has been confirmed by the celebration of the *Apatouria*, a festival that all Ionians shared, in which young members were initiated as members to the *phratries*. Athenian *phratries* controlled access to civil rights[637]. They had a duty of the highest importance to the state, to watch over the introduction of new citizens since "no Athenian was able to stand outside a *phratry*."[638]

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[630] S. D. Lambert, *The Phratries of Attica, Michigan Monographs in Classical Antiquity* (University of Michigan Press, 1993), p. 268. "...the balance of argument currently remains in favour of the view that fratries in some form dated back at least to the later Mycenaean period."

[631] Snodgrass, *The Dark Age of Greece*, pp. 386-387.

[632] Iris Bredow, "Der *qasireu* in der Gesellschaftsstruktur des pylischen Staates," *Klio*, no. 71 (1989): pp. 28-35. Also in Chester G. Starr, *The origins of Greek civilization : 1100-650 B.C.* (New York, London: W.W. Norton, 1991), pp. 326-329.

[633] M. Ventris and John Chatwick, *Documents in Mycenaean Greek*, 2nd ed. (Cambridge: Cambridge University Press, 1973), p. 576. Mycenaean Glossary : *qasireu* : guasileus "chief" used of local headmen not sovereign. [βασιλεύς: cf. βασιλῆες ... εισί άλλοι πολλοί ... εν Ιθάκη. Od. I, 394] and also p. 510 άρχων βασιλεύς.

[634] Lambert, *The Phratries of Attica*, p. 110.

[635] Osborne, *Greece in the Making 1200-479 B.C.*, p. 35.

[636] Lambert, *The Phratries of Attica*, p. 111.

[637] Burkert, *Greek Religion: Archaic and Classical*, p. 255.

[638] Nilsson, *Cults, Myths, Oracles, and Politics in Ancient Greece. With two Appendices: the Ionian Phylae, The Phratries*, p. 158.

The noble families in Attica were divided into phratries, or brotherhoods, whose members were called *phrateres* (brothers). The political reforms of Solon and Cleisthenes according to a statement in Aristotle's *Athenaion Politeia* left the phratries as they were[639] and democratically extended this organization to the people without "noble" (Athenian) ancestors, so every Athenian citizen belonged to a brotherhood or *phratry.* The members of the phratries would have meetings called *agorai* and this structure was not restricted to Athens[640]. The political reorganization of Cleisthenes also involved a reorganization of the family cult and although the phratry subgroups continued to practice their own cults, Aristotle speaks in the Politics of "the nationalisation or making common of private local cults", suggesting that some of phratry cults were transferred to the demes[641]; this exhibits how religious aspects were incorporated into political life[642].

Apart from religious and political units, the phratries were also active in the economic welfare of the state[643] since they were able to possess "a piece of ground, a temple, a house"[644] and phratries, as attested, had owned land and buildings for their own meetings and cults[645]. Executive members of phratries were the main leaseholders of the Laurion mines as is evident from the fourth century BC mortgage inscriptions that have been found in the Athenian Agora[646]. It is worth mentioning that among the family names recorded on these inscriptions, is a family from Siphnos which seems to have had strong connections with the Athenians and were recognised as ισοτελείς (that is, having Athenian citizenship)[647].

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[639] Lambert, *The Phratries of Attica*, p. 267.
[640] Robin Osborne, "The Demos and its Divisions in Classical Athens," in *The Greek City. From Homer to Alexander*, ed. Simon Price (Oxford: Clarendon Press, 1990), p. 271.
[641] Lambert, *The Phratries of Attica*, pp. 224-225.
[642] Nilsson, *Cults, Myths, Oracles, and Politics in Ancient Greece. With two Appendices: the Ionian Phylae, The Phratries*, pp. 150-170 on phratries.
[643] Lambert, *The Phratries of Attica*, Property and Finances pp. 191-203.
[644] Nilsson, *Cults, Myths, Oracles, and Politics in Ancient Greece. With two Appendices: the Ionian Phylae, The Phratries*, p. 169.
[645] Lambert, *The Phratries of Attica*, p. 193. Also in p. 202, "Such, then, is the evidence for the phratry's financial and landed property activities in the classical period: lending money to members; owing, leasing out, and selling landed property; honouring benefactors; seeing to the administration of its own affairs, the upkeep of its buildings, and the balancing of its budget. Behind it all was the religious activity..."
[646] Crosby, "A Poleitai Record of the year 367/6 B.C. (with "Addendum: A Topographical Note" by John Young)."
[647] G. V. Lalonde, Merle K. Langdon, and M. B. Walbank, *Inscriptions, Horoi, Poletai records, Leases of Public Lands*, vol. 19, *The Athenian Agora : results of excavations conducted by the American School of Classical Studies at Athens* (Princeton N.J.: American School of Classical Studies at Athens, 1991), p. 57 ff. Inscriptions P9, P13, P18, P25, P29. The same

The phratries were composed of the old *gene*, the old kingly families that had an inherited structure and the *orgeones* that formed the *thiasoi* which were local (voluntary) groups that performed the rituals[648]. The *gene (γένη),* were also priestly families that have used the central title *archon* for their chief official[649].

The family of Peisistratides (which provided the city of Athens with the famous tyrant Peisistratus in the sixth century BC) were also the owners of most of the Laurion mines until the end of the sixth century when their property was expropriated and the state of Athens became the owner.

The social and political reformation of Kleisthenes in Athens at the end of the sixth and the beginning of the fifth century had only a positive effect on the phratries which "continued not merely to exist but to function vigorously"[650].

The state was distributing some of the annual revenue from the mines to all citizens as Herodotus (Histories VII.144) and Aristotle (Athenian Constitution, XXII. 7) both testify, most probably by following the practice of the Siphnians (Herodotus, Histories III. 57). The distribution of the money was made through the phratries to ensure equal shares. The mines were leased annually and the names of the leaseholders were recorded in marble steles that have been found in the Athenian Agora excavations. The study of the names has proved that these tenants were the leaders along with some of the members of well known and prosperous phratries of the city (and some times from other cities like Siphnos) that had the means and the power to exploit the most important financial source of the Athenians, the Laurion silver mines[651].

Siphnean family is mentioned also in a fifth century (422/1 BC) resolution according to which the Athenians are honouring certain members of the Siphnian family for their services to the city. See in Aggelos Mathaiou, "Attiko psiphisma pros timin Polypeithou Siphniou," in *Proceedings of the 1st International Sifnean Symposium Siphnos 25-28 June 1998*, ed. Tz. Zervoudakis (Athens: Society for Sifnean Studies, 2000), pp. 239-248.

[648] Orgeones, οργεώνες signifies men who took part in a cult, later used of the members of a cult association. For the religious duties of the phratries see Nilsson, *Cults, Myths, Oracles, and Politics in Ancient Greece. With two Appendices: the Ionian Phylae, The Phratries*, p. 153. Also see in p. 160.

[649] Osborne, "The Demos and its Divisions in Classical Athens," pp. 271-272.

[650] Osborne, *Greece in the Making 1200-479 B.C.*, pp. 301-302.

[651] Conophagos, *Le Laurium Antique*, pp. 428-439. (Greek edition)

The Siphnian Pantheon

There is very little known from ancient literature and authorities about the Siphnian pantheon and their cult. The ancient writers when they refer to Siphnos mainly focus on the wealth derived from the silver and gold mines and the prosperity that the Siphnians were enjoying[652].

Hesychius in his Lexicon refers to three deities that were worshipped in Siphnos with distinctive epithets[653]: Artemis *Ekbateria* (Εκβατηρία), Apollo *Enagros* or *Epagros* (Έναγρος or Έπαγρος) and Zeus *Epibemios* (Επιβήμιος). The location of sanctuaries devoted to these deities has not been identified. Nevertheless, it seems likely that the memory of these deities has probably survived in the names of the Siphnian towns, Artemona and Apollonia. Archaeological evidence consists of a few inscriptions, some coins, a few statues and excavation findings like potsherds along with architectural remains[654].

Nymphs

Epigraphic sources give some more evidence about ancient cult in Siphnos. An inscription[655] was found engraved on the natural rock at the entrance to a cave in the western part of the island, south-east of the Kamares settlement, with the words "*Nymphaion Hieron*". This engraving was reported by most of the nineteenth century travellers to the island[656] who followed the steep ancient path leading to the cave that continues to the ancient mines at the summit of the mountain. This inscription has been engraved on the rock surface with a chisel. It was written in the Ionic dialect and has been dated to the late sixth to early fifth century BC. The cave has been recently[657]

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[652] See above in the chapter on history of Siphnos also Herodotus, *Histories* 3, 57 and Pausanias, *Description of Greece*, X, 11, 2.

[653] Hesychius Lexicon : Εκβατηρία, Έναγρος, Επιβήμιος.

[654] A comprehensive but not detailed account of the archaeological and literal data that survived concerning the Siphnean gods in Maria Elena Gorrini and Milena Melfi, "Siphnos: some notes on the reconstruction of the pantheon," in *Proceedings of the 2nd International Sifnean Symposium*, ed. Tz. Zervoudakis (Athens: Society for Sifnean Studies, 2005), pp. 214-226.

[655] IG XII, 5, 483.

[656] Ross, *Reisen auf den griechischen Inseln des aegaeischen Meers*, pp. 123-124. Also Bent, *The Cyclades*, pp. 18-33. V. C. Scott O'Connor, *Isles of the Aegean* (London: 1929), pp. 313-315.

[657] S. Samartzidou, "Ereunontas tis laikes latreies kai ta spilaia tis Siphnou (Researches on the popular cult and the caves of Siphnos)," in *Proceedings of the 2nd International Sifnean*

explored and excavated and the archaeological evidence (archaic potsherd, carbon fragments) suggests that the cave has been used since archaic times as a sanctuary for the cult of the nymphs. A cult in Siphnos of these most ancient deities is also inferred by the previous names of the island as given by Pliny (Meropia, Akis)[658] and Stephanus Byzantius[659] (Merope). Both these names in ancient literature are attributed to mythological female personifications like young girls, priestesses of a goddess or descendant of nature deities. The word *nymphe* in Greek literature refers equally to human brides, young women and divinities present in brooks, caves and flowers[660]. It can be assumed that Meropia and Akis were the names of the very first Siphnian nymphs[661].

A mythological variant, which probably indicates the Athenian influence on Siphnos and their common Ionian ancestors, is that *Meropia* was one of the daughters of *Erechtheus* (grandson of *Kekrops* the mythological first king and founder of Athens) and the mother of *Daedalus*[662]. This myth is further evidence of the long-established relations between the Siphnians and Athenians and an indication of their common ancestors.

The nymphs are also known as the companions of Artemis[663] and inhabitants of the mountains who rank "...neither with mortals nor with immortals; long indeed do they live, eating heavenly food [...] with them the Sileni and the sharp-eyed Slayer of Argus mate in the depths of pleasant caves..."[664].

A cult of the nymphs is also suggested from the depiction of a woman's head on some silver coins from Siphnos[665] which is most probably a nymph[666]. The head of a nymph was a very popular theme used on coins

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Symposium 27-30 June 2002, ed. Tz. Zervoudakis (Athens: Society for Sifnean Studies, 2005), pp. 251-270.

[658] Plinus, Naturalis Historia, b iv.22.

[659] Stephanus Byzantius, *Ethnika*, v. Siphnos

[660] Burkert, *Greek Religion: Archaic and Classical*, p. 151.

[661] Samartzidou, "Ereunontas tis laikes latreies kai ta spilaia tis Siphnou (Researches on the popular cult and the caves of Siphnos)," p. 258.

[662] Plutarch *Lives: Theseus* XIX, 5.

[663] Homeric Hymn to Aphrodite, 115-120.

[664] Homeric Hymn to Aphrodite, 256-264 Jeffrey Henderson, ed., *Hesiod - Homeric Hymns - Homerica*, 2002 ed., *The Loeb Classical Library* (Cambridge, London: Harvard University Press, 1936) p. 425.

[665] Now in the British Museum.

[666] Samartzidou compares the woman's head with coins from Larisa and Sinopi and arrives to the above stated conclusion. Samartzidou, "Ereunontas tis laikes latreies kai ta spilaia tis Siphnou (Researches on the popular cult and the caves of Siphnos)," pp. 258-260.

during the whole classical period in Greece and usually a local nymph was depicted.

An indication of the power this cult had over the Siphnians is given by one of the late nineteenth century travellers, Bent[667], who gives a very colourful description of how the inhabitants of Siphnos still believed in the danger of possession by these deities. There was a strong fear among them that nymphs could steal their sanity, especially for those who have walked near the cave and they would call them *nympholeptoi.* This superstition can be traced back to the fifth century BC in Attica and also in other places where possession by the nymphs was known as *nympholeptia* (νυμφοληψία). Verification of the antiquity of the term is also documented by epigraphic evidence[668].

The cave of the nymphs in Siphnos was considered a sacred place, regarded as an entrance to the bowels of the primordial oddess, the Earth-Mother; thus nymphs correspond to the primeval and mainly rural cult[669] connected with the properties attributed to the earth, that is, vegetation and fecundity[670].

Artemis – Potnia Theron

The earliest cult in Siphnos which can be documented, based on archaeological evidence, lies on the Acropolis at Kastro. The excavations of the British School of Athens that took place before the Second World War have revealed the remains of a temple dating from circa 700 BC to 550 BC[671]. Archaeological evidence, based on the terracotta findings, suggests a female deity and in particular, fragments of animal figurines and animal decorations on the dresses of the goddesses' idols[672] indicate that the female sanctuary deity of this temple was Artemis. These female figurines which are dated to the eight and seventh centuries BC, are considered to be modified versions of the Minoan-Mycenaean type of wheel-made terracotta female

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[667] Bent, *The Cyclades*, pp. 21-40.
[668] Gorrini and Melfi, "Siphnos: some notes on the reconstruction of the pantheon."p. 218
[669] Herodotus, Histories, III, 57-58.
[670] Samartzidou, "Ereunontas tis laikes latreies kai ta spilaia tis Siphnou (Researches on the popular cult and the caves of Siphnos)," p. 261.
[671] Brock and Young, "Excavations in Siphnos."
[672] N. Kourou, "Ta idola tis Siphnou," in *Proceedings of the 1st International Sifnean Symposium Siphnos 25-28 June 1998*, ed. Tz. Zervoudakis (Athens: Society for Sifnean Studies, 2000), p. 352, fig. 1-4.

figures with uplifted arms and narrow waist[673]. They were very popular during the Bronze Age[674] and they depict the Great Goddess who is known from the Knossos Linear B tablets as Potnia[675]. The name Potnia is connected in the Linear B tablets with "de forgerons ou d'un bouilleur d' onguents"[676] that is, the metallurgists and the blenders of pigments[677].

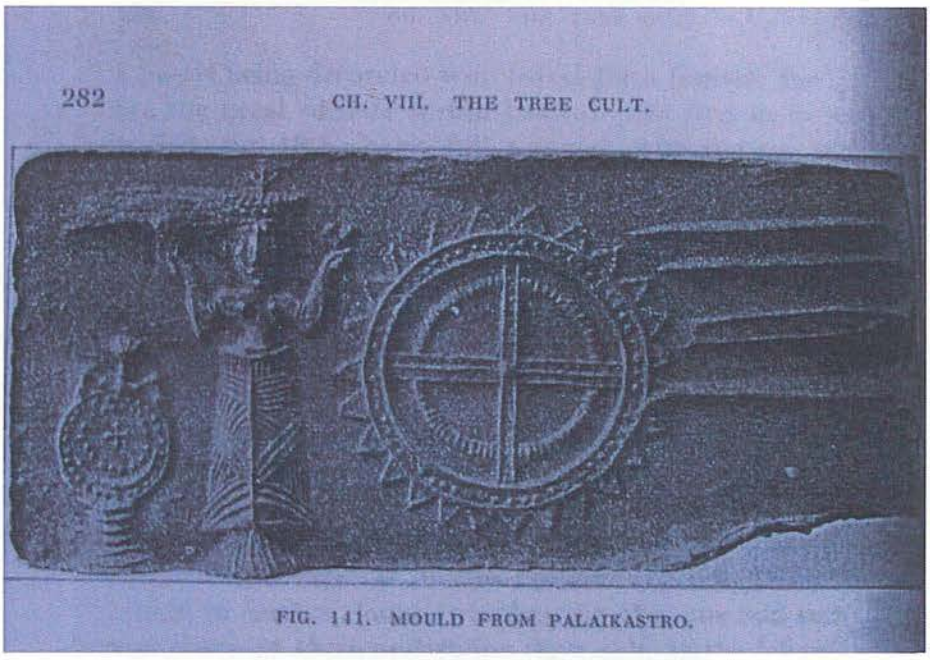

Figure 37. Bell-shaped cult idol from Palaikastro depicting the Minoan Goddess of Nature, Potnia. (Nilsson, Minoan-Mycenaean Religion, p. 282, fig.141)

The decoration on the skirt of the terracotta idols with griffins and plants places the figurine among a group of similar coroplastic artefacts that were produced in the seventh century BC and which were widespread in the Aegean islands, Attica and Cyclades[678] (Figure 38). These figurines confirm the stylistic and religious connections with Cyprus and Crete which was a reflection of the established commercial and cultural intercommunication

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[673] Ibid., pp. 351-370.
[674] There is extensive bibliography on this subject. Early findings are published and commented in Nilsson, *The Minoan-Mycenaean Religion and its survival in Greek religion*, pp. 278-288.
[675] Chatwick, *The Mycenaean World*.pp 88, 92
[676] Michel Lejeune, *Memoirs de philologie Mycenienne - Deuxieme Serie (1958-1963)*, vol. XLII, *Incunabula Graeca* (Roma: Edizioni dell' Ateneo, 1971), pp. 283-284.
[677] Pigments are substances found in mines.
[678] Kourou, "Ta idola tis Siphnou," p. 359.

between these islands from the Bronze Age and which continued during the geometric period[679].

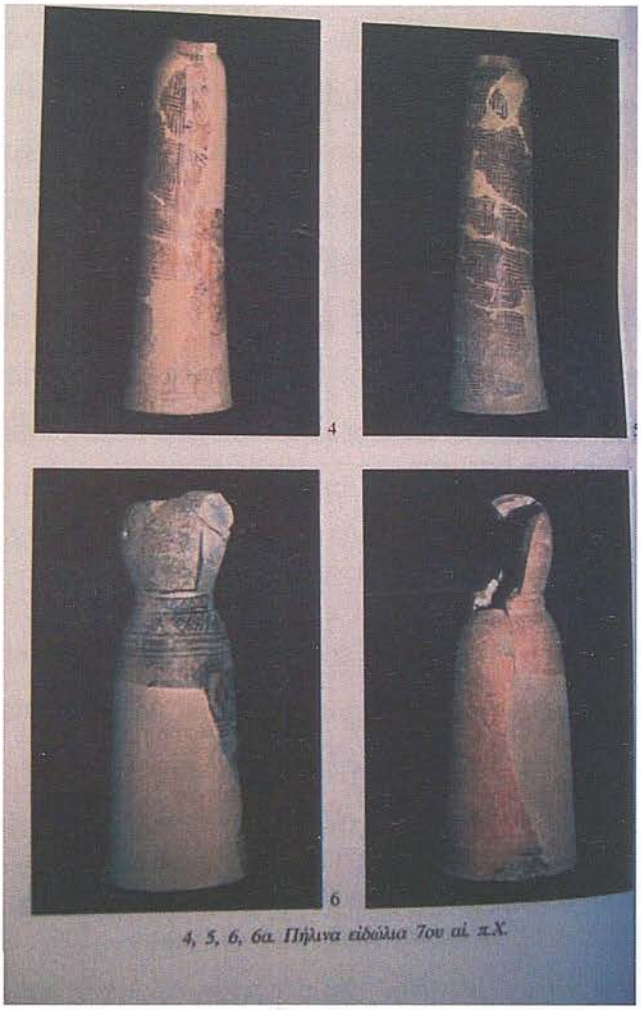

Figure 38. Bell figured terracotta idols from Siphnos. Seventh century BC. Skirt of the Goddess (Potnia-Artemis) decorated with griffins and plants. (Museum of Siphnos)[680]

Archaeological research has proved "that these religious innovations should be taken as part of a much larger phenomenon which included innovations in other arts and crafts such as ceramics, metalwork, jewellery, ivory carving and glyptic, as well as in architecture"[681].

The creation of religious artefacts, with regard to the female figurines began in the twelfth century BC and continued uninterruptedly into the

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[679] Jacqueline Karageorghis, *La grande deesse de Chypre et son culte a` travers l'iconographie de l'epoque neolithique au VIe`me s.a.C., Serie archeologique* (Lyon: Maison de l'Orient, 1977).
[680] Kourou, "Ta idola tis Siphnou," pp. 360-362.
[681] V. Karageorghis, "The Great Goddess of Cyprus between the Aegeans and the Eteocypriots," in *POTNIA. Deities and Religion in the Aegean Bronze Age. Proceedings of the 8th International Aegean Conference/ Goteborg University 12-15 April 2000*, ed. Robin Hagg (Liege: Universite de Liege, 2001), pp. 323-326.

Geometric period in Cyprus while in the rest of the Aegean, they completely disappear. In the Geometric period, they reappear in the Aegean. Anthropomorphic but also zoomorphic terracotta figurines are found more frequently in sanctuaries than in funerary contexts. The importance of sanctuaries has been connected with the rise of cities and the self-awareness of the Hellenes that attributed a pan-Hellenic character to these religious centres[682]. In the female terracotta figurines, a predominant position is held during the Geometric and Archaic period by the type of "goddess with uplifted arms" like those found on Siphnos.

The female votive figurines that date to the eighth and seventh centuries BC and have been found in the Cyclades, are considered to be direct descendants from the ones dedicated to the primordial Great Goddess of nature. [See Figure 37. Bell-shaped cult idol from Palaikastro depicting the Minoan Goddess of Nature, Potnia. (Nilsson, Minoan-Mycenaean Religion, p. 282, fig.141)]

The finds from various sanctuaries in the Cyclades suggest that a group of properties was attributed to this female goddess, mostly under the name of Artemis or Athena, who was worshipped as "Potnia Theron", a deity of nature but also a deity of fertility and regeneration[683].

Athena and Artemis are the two virgins among the Olympic pantheon that are most closely related with the properties of the primordial female goddess, that is, vegetation and regeneration. There are other gods and goddesses with similar properties like Demeter but the above deities retain the main characteristic of the ancient Great Goddess which is complete independence from a male consort evident in their description as "virgins"[684].

These figurines supplied evidence for the theory suggested in N. Kourou: "the deity worshipped in that sanctuary during its first phase dated to the seventh century BC, is identified here as Potnia Theron, a pro-Artemis

[682] Snodgrass, *The Dark Age of Greece*, pp. 275-286.
[683] Kourou, "Ta idola tis Siphnou," p. 362.
[684] The epithet "virgin" in ancient Greek is referent to the independence of a female meaning the one which is not accepting the sovereignty of a husband.

deity, that was possibly later known in Siphnos under the name Artemis Ekvateria"[685].

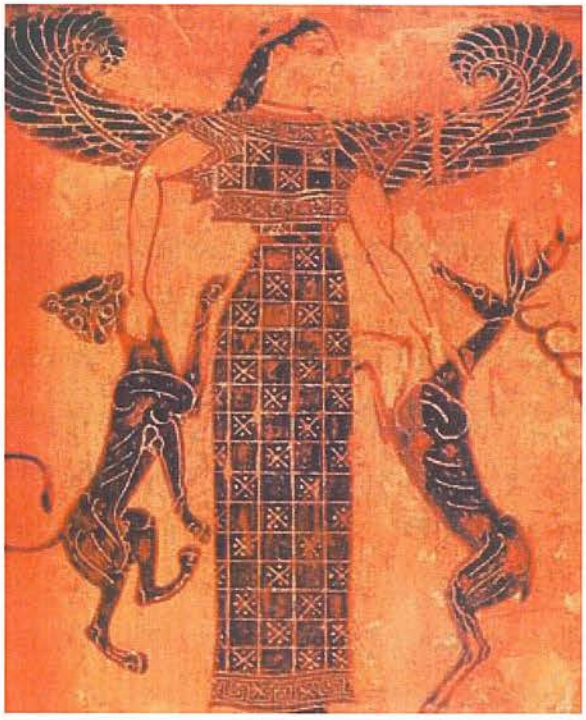

Figure 39. Artemis-Potnia depicted on the handle of the archaic Francoise vase in the Archaeological Musuem of Florence

The name *Ekvateria* is mentioned only for Siphnos and there is no other reference about this type of Artemis or her cult. The etymology of the name from εκ and βαίνω has suggested a connection between the deity and the port arrivals, ships or men but there is another kind of arrival that could have been also connected with the deity which is more close to her nature. A more comprehensive analysis of the multiple properties of Artemis and the rituals performed for her, indicate that she was the protector of young girls "arriving" or coming of age and being able to give birth[686].

In Plato's Republic[687] the verb εκβαίνω was used to describe the arrival, the passage from the age of childhood to the age of procreation for the young girls. This is a passage rite known as *Artemisia* and it was performed in Attica but also in other places. The ritual is associated with the

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[685] Kourou, "Ta idola tis Siphnou," p. 370.
[686] N. Kourou, "Potnia and Ekbateria," in *Proceedings of the 2nd International Sifnean Symposium*, ed. Tz. Zervoudakis (Athens: Society for Sifnean Studies, 2005), p. 236.
[687] Plato, Republic, 461b "όταν δε δη οίμαι αί τε γυναίκες και οι άνδρες **του γεννάν εκβώσι** την ηλικίαν ..."
"But when, I take it, the men and the women have passed to the age of lawful procreation, we shall leave the men free to form such relations..."

dedication of hair knots to the goddess who is the protector of the young girls. The so-called "Hyperborean Virgins" practised this ritual in Delos, at least since the Classical period and it can be assumed that similar rituals were common in all the islands of the Cyclades.

Artemis, according to the Homeric tradition, is the daughter of Leto and Zeus, the twin sister of Apollo. She was born a day before her brother in order to assist her mother giving birth to Apollo and was connected with the older goddess Eilethyia as the protector and assistant in birth-giving and bringing forth the young[688]. This characteristic is another elucidation of the divine features originally ascribed to the Minoan Great Goddess and later attributed to various Olympian goddesses[689].

Her birth place was Ortygia, a name which can apply to Delos or to Ortygia in Ephesus. According to Homer, she is the goddess who deals with death and she is also a healing and purifying divinity and has been associated with the custom of hanging the mask or image of a vegetation divinity on a tree to obtain fertility and the swing festival of the young girls[690].

Therefore Artemis is the goddess connected with arrivals, rites of passage that focus on the arrival of a new life or a new stage of life.

The nature of the divinity is in many cases vividly expressed by the distinctive nature of her rituals. Artemis has the characteristics of the Mistress of the Animals, familiar from a Near Eastern cult[691]. The goddess "who delights in the bow and killing beasts in the mountains"[692] reveals the violent nature of the hunting goddess in sacrificial rites like the ones described vividly by Pausanias[693], while at the same time, the presence of young animals affirms her property as their protector and mistress[694] placing her among the fecundity deities. She was strongly connected with the wild life of the mountains and not with the animals of the "higher agricultural community

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[688] Nilsson, *The Minoan-Mycenaean Religion and its survival in Greek religion*, p. 503.
[689] Persson, *The Religion of Greece in Prehistoric Times*, p. 130.
[690] The custom is described in Farnell, *Cults of the Greek States*, vol. II, p. 429 and 442-449. The author gives many references from ancient texts.
[691] Burkert, *Greek Religion: Archaic and Classical*, pp. 149-152, 362 n. 48. Also in Walter Burkert, *Structure and History in the Greek Mythology and Ritual* (Berkeley Los Angeles and London: 1979), pp. 78-98.
[692] Hymn To Aphrodite, 18 in Henderson, ed., *Hesiod - Homeric Hymns - Homerica.*
[693] Pausanias, *Description of Greece*, b. 7.18.11-13 on the festival of Artemis Laphria in Patra where alive animals like birds and bears were burned alive in the sacrificial pyre.
[694] A. M. Bowie, "Greek sacrifice: forms and functions," in *The Greek World*, ed. Anton Powell (London and New York: Routledge, 1995), p. 471.

[...] in certain localities the calf and the sheep were tabooed in her ritual"[695]. Even though most scholars now accept that there were no human sacrifices anywhere in Greece –perhaps only as an exception in cases of severe national crisis as the myth of the sacrifice of Iphigenia before the expedition to Troy reveals, and the actual sacrifice of the three young and handsome Asian princes to Dionysos by the Greeks just before the naval battle of Salamis[696] confirms- one of the rituals that is said to have been substituted for actual human sacrifice was the Arkteia at Brauron, where young girls were dedicated to the service of Artemis for the death of a bear sacred to the goddess who had initially demanded young girls as restitution[697]. The apparent cruelty of the Great Goddess of Nature, the Mycenaean Potnia Theron, which is strongly connected with the unique power to regenerate, is also evident in this exposition of brutality in the cult of Artemis[698].

One of the most important cults of Artemis was in Ephesus and her main festival, Ephesian or Artemisia, was held in early spring, at which games and various contests took place, although the ritual contained also orgiastic characteristics. This goddess is closely connected with the Amazons who are said to have built her temple and set up her image in the trunk of a tree. She has much in common with the oriental prototype of Aphrodite, and Cybele. The usual image of Ephesian Artemis, which was originally a palladium that had fallen from heaven, is in the form of a female with many breasts, the symbol of productivity or a token of her vital action as the all-nourishing mother. From the waist to the feet, her image resembles a pillar, narrowing downwards and sculptured all round with rows of animals (lions, rams and bulls)[699]. (Figure 40. Marble statue of Artemis of Ephesus from the Museum Selcuk in Turkey)

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[695] Farnell, *Cults of the Greek States*, vol. 2, p. 472.
[696] Maria Daraki, *Dionysos et la deesse terre, Champs* (Paris: Flammarion, 1994), p. 314 (Greek edition).
[697] Bowie, "Greek sacrifice: forms and functions," p. 472.
[698] On the subject of dismembering and taking a life as a way of achieving, through the fragmentation of the divine substance, the regeneration of the deceased, see in Vasilios Lambrinoudakis, "Merotraphes" (PhD Thesis, National University of Athens, 1971).
[699] Robert Fleischer, *Artemis von Ephesos und verwandte Kultstatuen aus Anatolien und Syrien*, vol. 35, *Etudes preliminaires aux religions orientales dans l'Empire romain* (Leiden: Brill, 1973).

Figure 40. Marble statue of Artemis of Ephesus from the Museum Selcuk in Turkey

On Siphnos was found[700] a marble relief in the form of a stele depicting a female figure wearing a thick necklace and three rows of egg-shaped objects. The female figure has been identified as depicting Artemis of Ephesus and from comparison with other similar statues of the goddess that belong to the Roman period, it has been dated to about the first century BC[701]. The triple row of egg-shaped objects can be recognised as bull testicles, a symbol of fertility which is also the main feature of the Ephesian Artemis[702]. It should nevertheless be emphasised that the cult of Ephesian Artemis is recognised as not entirely Greek in origin, and it is intimately connected with the original cult of the great goddess of nature and fertility in Asia Minor and Crete[703].

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[700] It has been first reported in Pollak, "Von griechischen Inseln," p. 206.
[701] Foteini Zafeiropoulou, "Anaglyfo Artemis Ephesias sti Siphno," in *Proceedings of the 2nd International Sifnean Symposium Siphnos 27-30 June 2002*, ed. Tz. Zervoudakis (Athens: Society for Sifnean Studies, 2005), pp. 243-250.
[702] Fleischer, *Artemis von Ephesos und verwandte Kultstatuen aus Anatolien und Syrien*, tables 11, 12, 18, 34. Also in Sarah P. Morris, "The Prehistoric Backround of Artemis Ephesia: A Solution to the Enigma of her Breasts?," in *Der Kosmos der Artemis von Ephesos* (Wien: Ulrike Muss, 2001), p. 141.
[703] Persson, *The Religion of Greece in Prehistoric Times*, pp. 141-142.

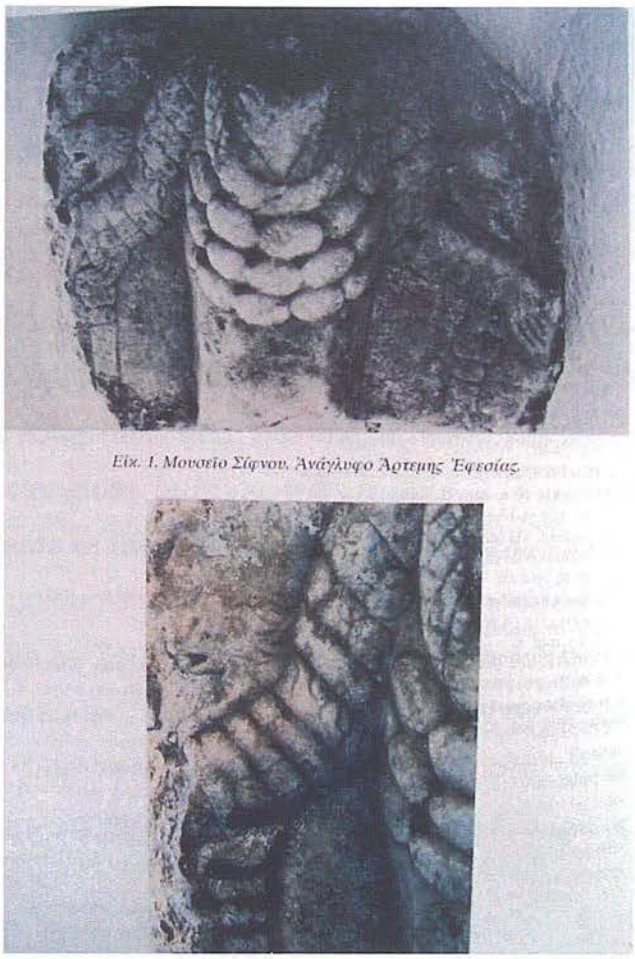

Figure 41. Marble anaglyph of Ephesian Artemis found in Siphnos. Museum of Siphnos

Even though the statue belongs to a later date than the period examined in this research, it confirms the long and strong presence of the Artemis / Potnia Theron cult on the island of Siphnos and it bears specific features that indicate a local interpretation of the divinity to which was ascribed fertility and generation properties and it has been also connected with rites of passage and arrivals.

Zeus

The name of Zeus is among the ones given by Hesychius for the gods that were worshipped in Siphnos but the archaeological evidence of his cult is scant. Most coins from Siphnos dating to the late sixth century depict an

eagle flying right on the obverse, which could have been associated with a Siphnean cult of Zeus but it could also have been a symbol derived from a local tradition[704]. On the eastern pediment of the Siphnean treasury at Delphi, the figure of Zeus had a prominent position as the judge in the struggle between Hercules and Apollo over the Delphic tripod[705].

A bronze coin dated to the fourth century BC that was first published by Goltzius[706] in the sixteenth century AD and also mentioned by Tournefort de Pitton[707] in association with his account of Pharos, a place name with a tower in Siphnos, presents on the obverse a male head turned to the left, with a beard and long hair, and wearing a laurel wreath. On the reverse, there is a tall rectangular building with a door and a vertical row of five windows at each side of the two visible while on the flat roof, there is a small figure making an unidentifiable gesture. The god's head has been proposed as being identifiable as Zeus but it remains debatable. The authenticity of the coin has been questioned, mainly because the only evidence of its existence is an engraving from an author, Goltzius, whose reliability has been doubted[708] but there are serious reasons to believe it is genuine[709].

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[704] Kraay, *Archaic and Classical Greek Coins*, pl. 6, no 119.

[705] Daux and Hansen, *Le Tresor de Siphnos*, p. 224.

[706] Huberti Goltzii, *De re nummaria antiqua opera quae extant universa. Tomus tertius continens Greciae eiusque insularum et Asia Minoris Nomismata, Ludovici Nonnii commentario illustrata* (Antwerpiae: 1708). Table XIX. Reference sited in Benedetta Bessi, "A new Siphnean coin: An authentic or a false piece?," in *Proceedings of the 2nd International Sifnean Symposium Siphnos 27-30 June 2002*, ed. Tz. Zervoudakis (Athens: Society for Sifnean Studies, 2005), pp. 207-214.

[707] Tournefort de Pitton, *Relation d'un voyage du Levant. In English. A voyage into the Levant: perform'd by command of the late French king. Containing the ancient and modern state of the islands of the Archipelago.*

[708] Goltzius' credibility has been initially questioned by Andrea Morelius and Joseph Eckhel, two numismatists who lived in the 18th century and accused him of introducing false coins. A more recent and sympathetic to Goltzius approach in Bessi, "A new Siphnean coin: An authentic or a false piece?," pp. 207-214.

[709] It seems most likely to be genuine because it would be impossible for Goltzius to be aware or informed of the existence of towers on the island and no reference model of any other coin depicting a tower or lighthouse could have been available to him. The coin reproduced by Goltzius had most probably really existed (though with some slight modifications) and belongs to the category of very rare archetypes–the particular one is a *unicum* – which even his critics admit he has documented, see in Joseph Hilarius Eckhel, *Doctrina nummorum veterum*, 8 vols. (Vienna: 1792), pp. CXLI-CLIV in Prolegomena.

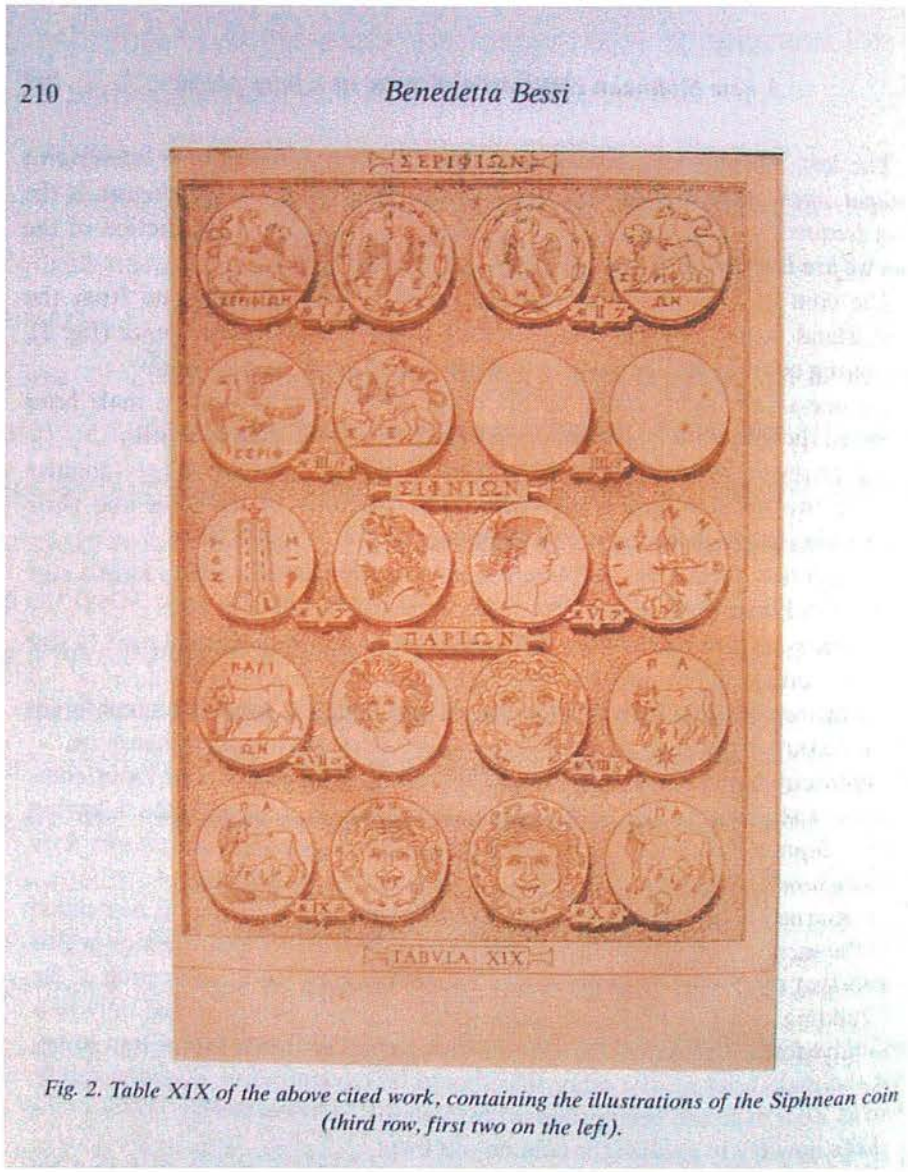

Fig. 2. Table XIX of the above cited work, containing the illustrations of the Siphnean coin (third row, first two on the left).

Figure 42. The Siphnian coin depicting a tower (from Goltzius)

According to Hesiod's account of the birth of the gods Theogony (main aspects of which were also familiar to Homer), Zeus deposed his father *Cronos*, who had deposed and castrated his father *Ouranos*; after his accession to power, Zeus fought the Giants and the monster *Typhon* who challenged his reign, defeated them by using his thunderbolts crafted by Hephaestus and drew up the present world-order by attributing to each divinity his or her respective sphere. According to the orphic version of the story, the Titans before their punishment had torn away the infant Dionysos and devoured his limbs[710]. They were struck by lightning from Zeus and burnt

[710] Except his heart that was saved by Athena and then given by Zeus to Semele who conceived and gave birth to the second Dionysos a reincarnation of the first one. The story is described in the Orphic texts cited in Christian August Lobeck, *Aglaophamus : drei Bu¨cher u¨ber die Grundlagen der Mysterien-religion der Griechen ; mit einer Sammlung der*

to ashes; from their ashes that included also the blood of the dismembered Dionysos and dust from the earth the human race sprang and this is the reason men participate (μετέχειν) in the divine element[711].

Ombrios and *Hyetios* are common epithets of Zeus, and we know of sanctuaries of Zeus on Olympus and on various other mountain tops, such as the highest mountain of the island of Aegina, where he was called Zeus *Panhellenios*[712].

One of Zeus' main domains is right and justice. To preserve his order, he is himself subject to it: he is committed to Fate. Zeus is attributed with a wealth of ethical contents and counts much for the development of moral ideas among mortals[713]. His cult rites are the most direct evidence of the ideas embodied in the state-religion and there is no Greek city without at least one shrine devoted to Zeus.

The worship of Zeus *Epibemios*, as attested to by Hesychius lexicon, has been related to an altar that was found on an Athenian cult in *Pnyx*, the place where the Athenian assembly held its sessions, and it has also been found in some of Aristophanes' verses[714]. The name probably refers to the god as protector and guardian of the orators, the people approaching the bema (platform) in order to speak[715], thus indicating the importance of the city-state rules and function of democracy for the Siphnians and their cult relations with the Athenian state[716].

Zeus is the Indo-European Sky Father and he is regarded by the Greeks as the highest god of the Olympic Pantheon. According to the Homeric epithets, he is the cloud gatherer, the dark-clouded, the thunderer on high, and the hurler of thunderbolts[717]. The thunderbolt is his weapon and

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Fragmente der orphischen Dichter, 2 vols., vol. 1 (Darmstadt: Wissenschaftliche Buchgesellschaft, 1961), pp. 553 ff.

[711] All ancient Greek tales about the origin of mankind recognise the divine ingredient in humans. For an extended bibliography on this subject in Lambrinoudakis, "Merotraphes" p. 138 n. 2. Also in Karl Kerenyi, *The Gods of the Greeks, Myth and Man* (London: Thames and Hudson, 1951), pp. 209-214. And in Jane Ellen Harrison, *Epilegomena to the study of Greek religion* (Cambridge: The University Press, 1921), p. 15 n. 4-5.

[712] Nilsson, *Greek Popular Religion*, p. 7.

[713] Farnell, *Cults of the Greek States*, vol. I, p. 35.

[714] H. A. Thompson, "Excavations in Athenian Agora: 1951," *Hesperia* 21(1952) (1952): pp. 91-93.

[715] A. B. Cook, *Zeus: a study in ancient Religion*, 2 vols., vol. 2. Zeus, God of the dark sky : (thunder and lightning). (Cambridge: Cambridge University Press, 1925), pp. 897 n. 3, 1180 n. 4.

[716] Gorrini and Melfi, "Siphnos: some notes on the reconstruction of the pantheon," p. 215.

[717] About Zeus mainly Burkert, *Greek Religion: Archaic and Classical*, pp. 125-131. See also in Cook, *Zeus: a study in ancient Religion*, passim.

lightning is his evident epiphany. Under the epithet *Kataibates,* a spot struck by lightning is inviolable and often sacred to Zeus Kataibates, "He who comes down, who descends"[718]. As the master of tempest, he is supposed to give signs through thunder and lightning. The epithet *Kataibates* was attributed to fecundity, meaning in the interpretation of this epithet as "Zeus descending to love women"[719]. Remembrance of the fecundity property of the thunderbolt remained in Latin literature in the form of the story of a woman who gave birth with the assistance of a thunderbolt[720].

A five-year sacrifice was probably made to Zeus where a thunderbolt struck[721]. Specific altars were erected and offerings were made in order to protect a house from lightning. This custom seems to have been fairly common[722].

The thunderbolt was also the most prominent epiphany of Zeus; it was as a thunderbolt that Zeus laid his fatal embrace on Semele, the mother of Dionysos, as a result of her ill-advised prayer to see Zeus in his full glory, misled by envious Hera[723].

The thunderbolt or thunderstone was also used as purification during the initiation rituals of the Dactyls (the metallurgical clans) in Crete in honour of "the night-wandering Zagreus", according to a fragment preserved by Porphyry. Zagreus in Crete is one of the personifications of Zeus (as the great Hunter) and he is identified also as Dionysos or Kouros[724].

A post-Hesiodic Cretan theogony[725] associates Zeus with *Kouretes*, (or *Couretes*), youthful warriors who danced around the crying baby Zeus with their shields. The *Kouretes* (quite often referred as *Korybantes*) are described by Jane Harrison as a fraternity of medicine men and metallurgists

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[718] Cook, *Zeus: a study in ancient Religion*, vol. 2, pp. 20, 21, 29 ff.

[719] Suidas Lexicon, w. Kataibates: Καταιβάτης Ζεύς παρ' Αθηναίοις παρά το καταβιβάζειν τους κεραυνούς ή από του καταβαίνειν δι' έρωτα των γυναικών.

[720] The thunderbolt had the same significance with the *pelekys,* the axe, and the name in Greek for thunderbolt which is αστροπελέκι (axe from the stars) verifies that they shared the same divine properties. For an extended analysis on the fertilisation powers attributed to the thunderbolt see in Lambrinoudakis, "Merotraphes". The roman sources (Byzantine historian John Lydos) are cited in p. 393, n. 7.

[721] Bowie, "Greek sacrifice: forms and functions," p. 474.

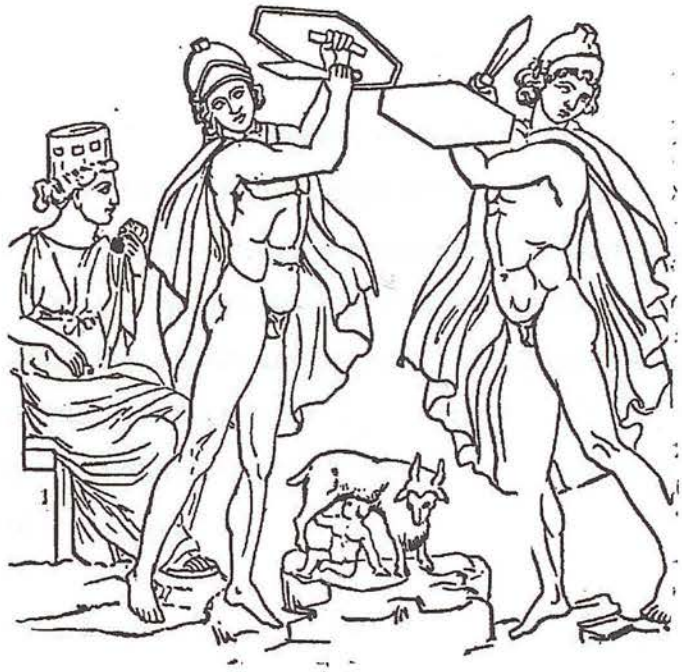
[722] Nilsson, *Greek Popular Religion*, p. 67.

[723] Nonnus of Panopolis, *Nonnos: Dionysiaca*, trans. W. H. D. Rouse, vol. 1, *Loeb Classical Library no. 344, 354, 356* (London: Harvard University Press, 1940), VIII 389-406, p. 301.

[724] An extended work on the divine character of Kouretes and their various (sometimes considered as magical) properties see in Harrison, *Epilegomena to the study of Greek religion*, pp. 50-74.

[725] The ancient sources (Epimenedes, Apollodorus, 1.5, Callimachos Hymn. 1.42-54) are given by Burkert, *Greek Religion: Archaic and Classical*, p. 127.

who, by performing their initiation rituals, have passed in the peoples' consciousness, from the human to the daemonic state[726].



Corybantes and Cybelé, with Infant Zeus.

Figure 43. Corybantes (or Couretes) and infant Zeus

The *Kouretes* had a chief *Koures* (πρωτοκούρης) who in Athens was an *archibacchos* (αρχίβακχος). The legend of the child Zeus who died[727] attended by the orgiastic dance of the *Kouretes,* has been interpreted as being "not the Hellenic Zeus but rather the Dionysus *Atis* of Phrygia"[728]. This particular Zeus, the child of Rea, was identified with the child of the Earth, like Dionysos, whose image was also hung on a tree as in other vegetation rituals (Artemis and Dionysos). In the process of "deification" or collective projection, as Harrison interprets it, this chief *Kouros* became the much suffering god Dionysus, the ever young Zeus.

In the war dance of these youths, the "Dictaean Zeus appears as the greatest Kouros who springs on flocks, corn fields, houses, towns, ships and young citizens"[729].

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[726] Harrison, *Themis : a Study of the Social Origins of Greek Religion*, pp. 42-47.
[727] From an epigram ascribed to Pythagoras referring to Crete "Here lies Great Zeus, whom men called God" Farnell, *Cults of the Greek States*, vol. 1, p. 36.
[728] Ibid., p. 37.
[729] Burkert, *Greek Religion: Archaic and Classical*, p. 127. Also in Harrison, *Epilegomena to the study of Greek religion*, pp. 15 ff.

Apollo

Several Siphnian archaic and classical coins depicting the head of Apollo[730], have been found, thus suggesting a prominent role for Apollo during this period, which is also evident in the erection of the Siphnian Treasury at Delphi. An inscription dated later in the third century BC was found inside the Acropolis at Kastro with the name Apollon Pythios[731] and it can be assumed that there was a sanctuary dedicated to Pythios, probably from an earlier date[732]. The above hypothesis is also supported by the discovery of an archaic lion head which, according to the excavator, could have formed part of a complete lion monument dedicated to Apollo[733] and the fact that the cult of Apollo *Pythios* is very well attested to during the archaic period on the islands of the Cyclades[734].

Apollo *Enagros* is known from ancient literature sources as a god connected with wild life, hunting and the *chora* (countryside) but without specific indications of place and time[735]. It has been suggested that this is a later Hellenistic cult of Apollo (third century BC), possibly introduced by the Egyptian dynasty at the period of the first Island League and must not be confused with Apollo *Pythios,* who was venerated from the beginning of the history of the island[736].

Apollo *Pythios* is associated with the oracle of Delphi, the most sacred place for all Greeks. Siphnos had a special connection with Delphi, as explicitly given in Pausanias: "The Siphnians too made a treasury, the reason being as follows. Their island contained gold mines, and the god ordered them to pay a tithe of the revenues to Delphi. So they built the treasury, and

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[730] Kraay, *Archaic and Classical Greek Coins*, pp. 46-47, pl. 6 no 125.
[731] G. Daux, "Deux fragments de decret a Siphnos," *Klio : Beitrage zur alten Geschichte* 52 (1970): pp. 67-72.
[732] Gorrini and Melfi, "Siphnos: some notes on the reconstruction of the pantheon," p. 216.
[733] Ch. Karouzos, "Archaike kephale en Siphno," *Archaeologiki Ephimeris* (1937): pp. 599-603. The suggestion has been made on the basis of comparison between similar buildings in Delos, Kea and Thera.
[734] Gorrini and Melfi, "Siphnos: some notes on the reconstruction of the pantheon," p. 216.
[735] Sophocles, *Oedipus at Colonus*, 1091; Xenophon, *In Hunting*, I, 1; Pausanias I, 41, 3.6. In the above texts Apollo is referred as *Agraios*.
[736] Gorrini and Melfi, "Siphnos: some notes on the reconstruction of the pantheon," pp. 218-219.

continued to pay the tithe until greed made them omit the tribute, when the sea flooded their mines and hid them from sight."[737]

Apollo is the god of catharsis and is connected both with the Olympian law and order and notions of vengeance, magic and ecstasy[738].

Although he is considered to be the most Greek god[739], at least three different components of prehistoric cult in the worship and properties of Apollo can be recognised[740]. The epithet *Hyperborean,* meaning the "one coming from north", gives Apollo a corresponding origin. Also, according to Burkert, the etymology of his name (Apollo) derives from the institution of the *paellai,* which were annual gatherings of the tribal or phratry organisation, where youths and initiates were admitted and "can be contingent for the entire Dorian-northwest area"[741]. The central point of the *Hyperborean* Apollo cult was the oracle at Delphi, which held the festival of the phratries called *apella*[742] but Herodotus (Histories 4.33) writes that Hyperborean offerings also arrived occasionally in Delos.

The other component comes from Minoan Crete and is indicated in the epithet *Delphinios* and the Homeric "Hymn to Apollo"[743]. It can be also identified in the intimate connection between the Cretan healing hymn (and god) *Paian* and Apollo[744]. The purification ceremonies in Delphi were performed by Cretan priests and were Cretan in origin, associated with the coming of *Delphinios* after his purification from the blood of *Python*[745].

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[737] Pausanias, *Guide to Greece / Pausanias; translated [from the Greek] with an introduction by Peter Levi; illustrated with drawings from Greek coins by John Newberry; maps and plans by Jeffery Lacey*, book 10.11.2.
[738] Guthrie, *The Greeks and their Gods*, p. 216.
[739] Martin P. Nilsson, *Geschichte der griechischen Religion* (Munich: Beck, 1955-1961), vol. I, p. 529.
[740] Burkert, *Greek Religion: Archaic and Classical*, p. 144.
[741] Ibid., p. 144 n.15.
[742] Nilsson, *Cults, Myths, Oracles, and Politics in Ancient Greece. With two Appendices: the Ionian Phylae, The Phratries*, p. 151.
[743] Homeric Hymn to Pythian Apollo 388-501. Apollo in the form of a dolphin led a ship with "Cretans from Knossos" to Delphi and asked them to become priests in his temple.
[744] In the Linear B tablets found in Knossos and dating in the fourteenth century BC, it is attested the name Pajawone, which is read Paiaon, to whom offerings are made and is evidence to the worship of the god under that name in the Mycenaean period of Crete.
[745] Farnell, *Cults of the Greek States*, vol. IV, p. 147.

Figure 44. A Roman coin from Thessaloniki, depicting Apollo Pythios with a snake and tripod. (Third century AD)

The third origin comes from the Semitic tradition and thus features like the bow and the arrow can be explained which signify the ability of Apollo not only to heal but also to destroy by spreading diseases to people and animals[746]. The name Apollo could also derive from the word *Apulunas*, the name of the god guardian of gates (like the Greek god) and whose name was inscribed on four Hittite altars[747].

The Apollo cult had the advantage of two Pan-Hellenic worship centres, one on the small island of Delos, the birthplace of the god and the other at Delphi, both of which have played a very important role in strengthening the sense of common identity of the Greeks[748]. The god was considered as the protector of the phratries, but also the father god of the Ionians, being the father of Ion[749].

Apollo was also the protector of the gates and passages under the epithet *Agyieus* and therefore, he is connected with the aniconic worship of the sacred stones, the *baetyloi* or pillars which were very important in the Minoan religion as proven by the sacred scenes depicted on the Minoan rings and seals[750].

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[746] In Iliad the arrows of Apollo signify pestilence which resembles the Semitic god Resep who as a plague god shoots firebrands and the god Hittite Guardian god who also is portrayed with bow and arrow. Burkert, *Greek Religion: Archaic and Classical*, p. 145.
[747] Bedfich Hronzy, *Hethitische Keilschrifttexte aus Boghazkoi : im Umschrift*, vol. Heft 3, Stk. 11, Lief. 1, *Boghazkoi Studien* (Leipzig: J.C. Hinrichs, 1919).
[748] Burkert, *Greek Religion: Archaic and Classical*, p. 143.
[749] Farnell, *Cults of the Greek States*, vol. IV, p. 153.
[750] Evans, *The Mycenaean Tree and the Pillar Cult and its Mediterranean Relations*, pp. 15-17, 22. The gradual translation of the pillar image into a human shape in pp. 65-69.

The god, from the fifth century BC onwards, has been associated with Helios, the Sun-god, as we learn from Plato and Euripides.[751]

Dionysos

Among the most ancient Greek gods is Dionysos, in spite of the fact that he is often referred to as the foreigner, the stranger. His name appears on Linear B tablets dating from the thirteen century BC that were found in the Mycenaean palace at Pylos, in connection with a name meaning "women of the place of wine"[752]. These women can be identified as those who later in Greece would form the special corporations of Dionysian women, known as Thyiades in Delphi, Gerairai in Athens etc. and performed the Dionysian rites like the Anthesteria in Athens, where women dance and drink wine in front of a stele dressed with clothes and bearing a mask of the god.

Figure 45. Women dancing around the image of Dionysos

The antiquity of Dionysos is also attested to by the fact that the ritual of Anthesteria, also called Older Dionysia, is "common to both Ionians and Athenians and therefore predates the Ionian migration"[753].

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[751] Plato *Laws* 946b-c. Eur. *Phaeth.* Fr. 781. Plutarch *De Delphic Oracle* 433d. The references are cited in Farnell, *Cults of the Greek States*, vol. IV, p. 137.
[752] Karl Kerenyi, *Dionysos. Archetypal Image of Indestructible Life*, trans. Ralph Manheim (London: Routledge and Kegan Paul, 1976), p. 68.
[753] Burkert, *Greek Religion: Archaic and Classical*, p. 162.

In Crete, Dionysos is called *Chthonios* – the subterranean- and *Zagreus* and he has retained properties of the Great Goddess, being a hunter and depicted with poppies as a diadem[754]. He is blurred with the "lord of the wild beasts" that was worshipped in the Idean Cave, given also the name of Zeus.

Dionysos' mythological consort was Ariadne, the "mistress of the Labyrinth", another representation of the Great Goddess[755]. The pair is identified with the "divine pair" in the Minoan-Mycenaean religion as has been demonstrated by Evans[756]. More evidence comes from the coins of Tenedos and Caria in Asia Minor, which show on the reverse side the double-axe, symbol of the divine pair, the primordial couple from the union of which the world was created, while on the obverse side, appears a janiform head which has been identified with Dionysos and Ariadne[757].

The plurality of the Dionysian properties, which are contradictory in many cases, has been explained as the result of syncretism between two (or even three) separate gods under the same name, the Dionysos son of Persephone and Zeus who was killed by the Titans, and the Dionysos son of Semele and Zeus who was immortal, and acknowledged by the Orphics as the reincarnation of the first one[758]. According to the Orphic hymns, the assistant at his birth was Ὕπτα, *Hipta*, originally the Great Mother or the Phrygian Lady of the Mountains. Dionysos is known also under the name Sabazios, which is used either for Zeus or Dionysos by the Greeks, according to the region and their cult was identical[759].

The Greek mythological tradition associates Dionysos with Phrygia and Lydia in Asia Minor and with the Phrygian Mother of the Gods. The name of his mother, Semele, has been interpreted as meaning "earth"[760]. The myth of his birth by Semele is of a particular interest, especially because the name that was attributed to him as the twice born or *διμήτωρ,* the one born from

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[754] Kerenyi, *Dionysos. Archetypal Image of Indestructible Life*, pp. 84 ff.
[755] Ibid., p. 90.
[756] Evans, *The Mycenaean Tree and the Pillar Cult and its Mediterranean Relations*, p. 10.
[757] Barclay Vincent Head, *Historia numorum : a manual of Greek numismatics* (Oxford: Clarendon Press, 1911), pp. 476-477.
[758] Sourvinou-Inwood, *Hylas, the Nymphs, Dionysos and Others. Myth, Ritual, Ethnicity*, pp. 169-189.
[759] Kerenyi, *Dionysos. Archetypal Image of Indestructible Life*, p. 275.
[760] Farnell, *Cults of the Greek States*, vol. V, p. 94.

two wombs or matrixes[761]. According to the tragedy *Bacchae* written by Euripides at the end of the fifth century, Dionysos himself attests to his mother Semele having been "midwived by fire, delivered by the lightning's blast"[762]. The hymn *Dithyramb* (passing through two gates) is dedicated to Dionysos, explicitly referring to his second birth from the thigh of his father Zeus[763].

Figure 46. The second birth of Dionysos from the thigh of Zeus

According to the myth, Semele, the daughter of Kadmos and Harmonia, became pregnant by Zeus. Hera, the jealous consort of Zeus, disguised herself and persuaded Semele to demand that Zeus should come to her in his entire splendor. Zeus could not break the oath he had given to Semele to fulfill her requests and presented himself with lightning –which was his most magnificent and imposing epiphany- and so Semele was consumed

[761] In Greek the word *μήτρα* means "womb" and *μητ(έ)ρα* means "mother". The same word is used for "matrix". For the uses of the word in connection with *Chora* (Χώρα) the so-called matrix of the physical world as used in Plato see in Casey, *A Philosophical History*, Chapter 2, 3 passim and p. 66.

[762] Martin W. Meyer, ed., *The Ancient Mysteries. A Sourcebook of Sacred Texts* (Philadelphia: University of Pennsylvania Press, 1999) p. 67.

[763] Harrison, *Themis : a Study of the Social Origins of Greek Religion*, p. 37.

by the fire[764]. However, Zeus sent Hermes to rescue the unborn child from the mother's ashes and sewed it into his thigh until it was ready to be born. Thus Dionysos is often called "the twice-born"[765]. Dionysus was raised by Semele's sister *Ino*, and later by the nymphs of mount *Nysa*.

Dionysos is the god of the arrivals, the god of epiphanies and advents[766]. His unique ability to transcend from the heavens to earth and from there to the chthonian or subterranean world makes him the god of passages, supervising the rites of passages and in particular, the "sacred marriage", that is, the union of Dionysos with the wife of the *basileus*[767].

These epiphanies of the god have been connected with the arrival of his cult or, in places where his cult was already established, it has been suggested that they were connected to the introduction of a different variation of the cult of the same god. This is evident in the legend, according to which, Peisistratos, the tyrant of Athens who lived in the sixth century, considered responsible for the foundation or the development of the Athenian festivals in honour of Dionysos. Peisistratos must have expanded the already existing cult and introduced new features into the ritual, after his return from his ten-year exile in the Macedonian area where he settled. During his exile, "he went to the Pangaion region from which he raised money" as is stated by Aristotle (Athenian Constitution 15. 2). It has been suggested that Peisistratos conceded to introduce in Attica the cult of the Thracian-Macedonian god, in return for being allowed to exploit the mineral wealth of Pangaion[768]. The mountain was famous in antiquity for its gold and silver mines and it was inhabited and exploited by indigenous Thracian tribes who were also considered to be the founders of Dionysian cult and his most devoted worshippers. It should be noted that Peisistratos is the tyrant who reopened and introduced new techniques in Laurion mines, most of which he owned[769].

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[764] Ovid, *Metamorphoses* III.308-312; Hyginus, *Fabulae* 179; Nonnus, *Dionysiaca* 8.178-406.
[765] Apollodorus, *Library* 3.4.3; Apollonius Rhodius, *Argonautica* 4.1137; Lucian, *Dialogues of the Gods* 9.
[766] Kerenyi, *Dionysos. Archetypal Image of Indestructible Life*, pp. 139 ff. Also in Daraki, *Dionysos et la deesse terre*, pp. 40 ff. See and in Sourvinou-Inwood, *Hylas, the Nymphs, Dionysos and Others. Myth, Ritual, Ethnicity*, pp. 190 ff.
[767] Daraki, *Dionysos et la deesse terre*, p. 173.
[768] J. W. Cole, "Peisistratus on the Strymon," *Greece and Rome* 22 (1975): pp. 42-44.
[769] Conophagos, *Le Laurium Antique*, p. 82-83.

Siphnos during archaic times occupied a privileged central position on the then international scene as it is evident from the spread and amount of its silver coins[770]. The Siphnians were supplying silver to Peisitratean Athens for their coinage because the Laurion mines were not exploited in full before 510 BC and that created a special relationship between Athens and Siphnos[771]. It has been suggested that Athens had a strong influence, especially by imposing the Athenian cults, particularly of Dionysos and Hermes and probably Zeus, upon Siphnos[772]. There is more information about ancient Athens than for all of the rest of Greece so analysis of the Athenian festivals could also enlighten the rituals of Siphnos.

The religious rites connected with Dionysos were enacted at the beginning of the Dionysian winter period at Delphi, around early November. The Dionysian celebrations and rituals extended until March, the month of the Great Dionysia[773]. It was originally the festival of the great Dionysian procession that was performed in open spaces within the city especially formed as theatres that led to the development of theatre as an architectural form and poetic literature[774]. The festival and the mysteries attached to it were as equally important for the citizens as the Eleusinian mysteries and both were acknowledged in antiquity as the most important festivals of Athens. There were several differences between the city and rural cult. The festival, especially in rural areas, is perceived as "a prolonged anticipatory celebration of the birth of Dionysos"[775].

The main festivals of Dionysos

The ritual known as *Oschophoria* Ωσχοφόρια was performed at the end of October, with a procession of young boys dressed in female clothes and bearing branches of vines with grapes[776]. The connection with the vintage is clear but the rite is also associated with the return of Theseus from Crete and

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[770] Napoli, "The silver coinage of Siphnos during the Archaic and Classical period," pp. 197-206.
[771] Gorrini and Melfi, "Siphnos: some notes on the reconstruction of the pantheon," pp. 216-217.
[772] Marco Di Branco, "The siphnean destiny: myth religion and propaganda at the sources of an ancient *topos*," in *Proceedings of the 1st International Sifnean Symposium Siphnos 25-28 June 1998*, ed. Tz. Zervoudakis (Athens: Society for Sifnean Studies, 2000), pp. 257-262.
[773] Kerenyi, *Dionysos. Archetypal Image of Indestructible Life*, pp. 290-315.
[774] Arthur Pickard-Cambridge, *The Dramatic Festivals of Athens* (Oxford: Clarendon Press, 1968), pp. 57 ff.
[775] Kerenyi, *Dionysos. Archetypal Image of Indestructible Life*, p. 296.
[776] Proclus, *Chrestomathy*, 28.

the dance γερανός geranos was also performed in remembrance of the dance that Theseus and his consorts had danced in Delos, after the slaughter of the Minotaur and the escape from the labyrinth, known also as the labyrinth or Trojan or Delos dance[777].

The winter months were named Maimakterion, Poseideon, and Gamelion. The god Poseidon is depicted on vases as expecting the arrival of Dionysos who comes from the underworld and the time of this arrival must coincide with the time that Apollo was preparing to leave Delphi and Dionysos was left the only master of the pan-Hellenic sanctuary.

The month *Gamelion* (around January) was called *Lenaion* by the Ionians, not only in Ionia but also in other places where the Ionians lived, like Athens and Cyclades. The naming of the month was probably after the festival called *Lenaia* that was held during that period. *Lenaia* derives from the word *lenos*[778], which means "the place where the wine is pressed and preserved until fermentation is complete"[779]. There are reports that there were at least two such sanctuaries of Dionysos in the Attica country, which were also wine cellars, with a *lenos* where the grapes were crushed and then placed under the press. These sanctuaries were exemplary wine presses appropriate for the religious rites which were performed[780].

The Dionysian ritual of *Anthesteria* was practised in Athens during the winter months, which belonged to Dionysos, and it lasted three days around the end of February and beginning of March. *Anthesteria* was connected with another ritual that was performed in Thebes and in Lemnos in honour of Dionysos and his mother Semele and it is known as the Kabeiria or Cabiric mysteries[781]. The Kabeiroi[782], mysterious blacksmith gods, were connected mainly with Hephaestus and also with Dionysos, who led the burlesque return of their legendary grandfather Hephaestus to Olympus. The most common finds in their sanctuary in Lemnos are wine vessels, as they

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[777] Plutarch, *Lives Theseus*, 22,23

[778] The same word ληνός is still used in Greece and Cyprus to describe the building with the winepress and the storage for the must (the unfermented grape juice).

[779] Kerenyi, *Dionysos. Archetypal Image of Indestructible Life*, p. 299. p. 299

[780] In Hesychius s.v. Ληναί: Βάκχαι and (linai) means "the wine press women" who assisted at the birth of Dionysos according to Ibid., p. 298.

[781] Gerard van Hoorn, *Choes and Anthesteria* (Leiden: E.J. Brill, 1951).

[782]The most extensive study in Bengt Hemberg, *Die Kabiren* (Uppsala: Almqvist & Wilksells Boktryckeri, 1950).

were known as exceptional wine drinkers[783]. The people of Lemnos were called also Tyrrhenians which has been described as peculiar because they did not have any connection with the Etruscans[784]. It is worth remembering that the word Tyrrhenian is connected with the word *turris,* meaning tower in ancient Greek and *Tyrrhenian* or *Tyrsenians* means also the people who built towers[785].

Another source of information about the Dionysos' cult comes from the oracle of Delphi where Dionysos shared the sanctuary with Apollo. The strong connection between Siphnos and Delphi has already been mentioned and was recognised in antiquity that the Siphnian Treasury was one of the richest buildings of its time and the most famous the Siphnians ever built outside Siphnos[786].

Plutarch wrote that "the Delphians believe that the remains of Dionysus lie in their oracular shrine; and the Hosioi (Holy Ones) make a secret sacrifice in the temple of Apollo when the Thyiades awake Liknites"[787]. The name Liknites (λικνίτης) derives from λίκνον (the cradle and the winnowing fan), meaning "the one in the cradle" or "the one of the winnowing fan". The shape of both tools is similar and the name derives from the verb λικνίζω meaning "to shake". The cradle is also used in metallurgy for panning gold and silver[788]. We have also acquired more information about the Dionysos cult from the architectural features of the Siphnian Treasury.

Two caryatids in the Siphnian treasury that supported the antae in the place of pillars have been preserved in fragments[789]. Recently a new fragment was found and completed the relief scene that is depicted around the cylindrical body of the polos[790].

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[783] Burkert, *Greek Religion: Archaic and Classical*, pp. 281-282.
[784] Ibid., p. 282. The connection with the Etruscans in Chantraine, *Dictionnaire Etymologique de la Langue Grecque*, p. 1147.
[785] Hjalmar Frisk, *Geschichtes etymologishes Worterbuch*, ed. Carl Winter, 2 vols., vol. II (Heidelberg: Universitatsverlag, 1970), p. 948.
[786] Herodotus *Histories* book 3,chapter 57 section 2
[787] Plutarch Mor. 365.
[788] This procedure is called "enrichment" in the metallurgical terminology and an advanced apparatus for this purpose was build in Laurion out of marble, using water and called πλυντήριον (washing machine). For extensive information of this very important procedure in the production of silver see in Conophagos, *Le Laurium Antique.*
[789] See above in historical analysis and in Daux and Hansen, *Le Tresor de Siphnos*, p. 221.
[790] Petros G. Themelis, "The Cult Scene on the Polos of the Siphnian Karyatid at Delphi," in *The Iconography of Greek Cult in the Archaic and Classical Periods. Proceedings of the First International Seminar on Ancient Greek Cult, organised by the Swedish Institute at Athens and the European Cultural Centre of Delphi, 16-18 November 1990*, ed. Robin Hagg (Athenes-Liege: Centre d'Etude de la Religion Grecque Antique, 1992), pp. 49-72.

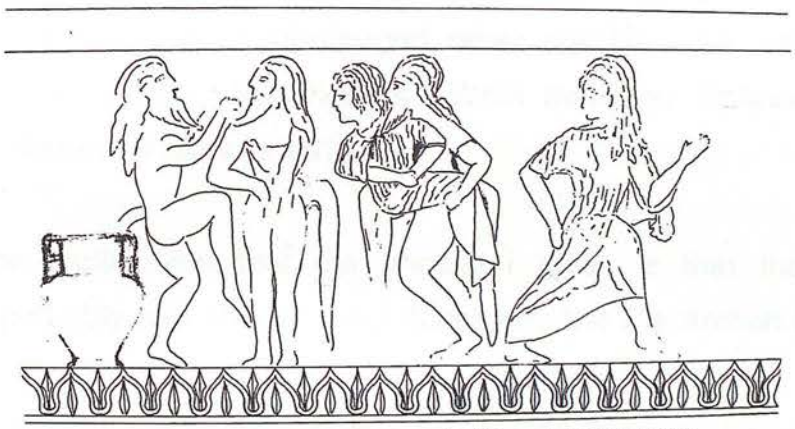

Fig. 5. Restored drawing of the Dionysiac thiasos. Back part of the relief scene on the Siphnian Karyatid's polos.

Figure 47. The Dionysiac thiasos scene on the Siphnian Karyatid's polos (after Themelis)

It has been identified as a cult scene representing the Delphic ritual of Dionysos *Liknites*. The maenad priestess is probably the leader of the college of the Thyiades. It has been suggested that a pillar or wooden pole with the mask of Dionysos hung on it, like the one which is described by

Pausanias (10.19, 3)[791], and it was depicted behind or close to the table carrying the *liknon*[792] in the centre of the scene.

The strong relationship between Attica and Siphnos enables us to assume that *Anthesteria* and *Lenaia* were festivals that took place also on Siphnos. More substantial evidence comes from the fact that the ritual described as "Swinging of the girls" has survived as a custom that is still performed on Siphnos[793]. This also indicates the powerful impact and the importance this ritual has always had for the people of this island.

In the speech *Aeginiticus* by Isocrates (Speeches 19.36), we find evidence that the ritual of "sacred marriage" between the wife of the *basileus* and the Dionysos was also performed on Siphnos. The Siphnian defendant in the text claims that:

> "All the Siphnians would bear witness, however, that my ancestors were foremost of the citizens there in birth, in wealth, in reputation, and in general standing. For who were thought worthy of higher offices, or made greater contributions, or served as choregi (sponsors) more handsomely, or discharged other special public services with greater magnificence? What family in Siphnos has furnished more kings?"

The explanation that the translator gives is that these "kings" (βασιλείς) probably had only religious functions, like the Archon Basileus at Athens[794].

The reference to *choregus* -a citizen who defrayed the expenses of bringing out an official state ritual or festival- suggests that the institution of the *choregia,* which is well attested to in Athens, was familiar also on the

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[791] Pausanias (10.19, 3) gives the information that a bronze mask of Dionysos was among the dedications standing at the temple erected on a pillar or a wooden pole, dedicated by the people of Lesbos.

[792] As mentioned above liknon is the cradle and the winnowing fan also used in metallurgy for the panning of gold and other metals (silver, lead etc).

[793] The custom is described in several folklore texts about Siphnos. The most recent and complete approach in Leandros Polenakis, "Anazitontas to archaio theatro tis Siphnou os ktisma kai os leitourgia - In search of the ancient theatre of Siphnos as a ritual and as a building," in *Proceedings of the 1st International Sifnean Symposium Siphnos 25-28 June 1998*, ed. Tz. Zervoudakis (Athens: Society for the Sifnean Studies, 2000), pp. 295-300.

[794] This text is based on the following book: *Isocrates.* Isocrates with an English Translation in three volumes, by George Norlin, Ph.D., LL.D. Cambridge, MA, Harvard University Press; London, William Heinemann Ltd. 1980.

island of Siphnos and serves as a strong indication that the festivals in Siphnos were magnificent and expensive enough to require sponsorships.

The cult of Dionysos consisted of many different rituals that were performed and practised throughout the year in several festivals. The festivals of Dionysos at Athens that can be identified are the *Anthesteria*, the Le*n*aia the *Rural Dionysia* and the *Great Dionysia*[795].

The *Anthesteria* were performed by all the Ionian cities at the same time during the month *Anthestirion,* close to the end of winter. The fact that all Ionians shared the same name and time for the festival is a strong indication of the antiquity of Dionysos' worship which was almost certainly practised before the colonisation of the Ionians[796]. The name probably derives from the word *ανθέω* (to bloom or flourish)[797]. The celebrations included the ceremonial and physical union between the wife of the *basileus* (the king) and the god[798], which is actually the only verified act of "sacred marriage", a hierogamy between the god and a queen in all Greek religious history[799].

The title of Archon Basileus (άρχων βασιλεύς) so-called because on him devolved certain sacred rites inseparably connected with the name of king (βασιλεύς). He was responsible for the care of the Eleusinian Mysteries and was obliged, therefore, to be an initiated person of the *Lenaia* and Anthesteria. He was appointed as superintendent of a number of antiquated sacrifices, some of which fell to the share of his wife, the *βασιλίννα* (queen)[800].

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[795] Pickard-Cambridge, *The Dramatic Festivals of Athens*, pp. 1-88.
[796] See above in Chapter 3, pp. 67 ff.
[797] Farnell, *Cults of the Greek States*, vol. V, pp. 214-224.
[798] The most credible ancient source is considered to be Aristotle's *Athenian Poleitia* iii. 5 "...but the King had what is now called the Bucolium, near the town hall (as is indicated by the fact that even at the present day the union and marriage of the King's Wife with Dionysus takes place there)..." in Aristotle, *Aristotle*, trans. H. Rackham, 23 vols., vol. 20 (Cambridge MA, London: Harvard University Press, William Heinemann Ltd, 1952).
[799] Mircea Eliade, *A History of Religious Ideas*, trans. Willard R. Trask, vol. 1. From the Stone Age to the Eleusinian Mysteries (Chicago: University of Chicago Press, 1978), p. 362.
[800] Harry Thurston Peck, *Harpers Dictionary of Classical Antiquities* (New York: Harper and Brothers, 1898).

Figure 48. The basillina led by a seilinos to the marriage with Dionysos.

The title and the role of *basileus* are ancient and have their origin in the Mycenaean period[801]. This is confirmed by the inscriptions of Linear B on the tablets that were found in Pylos and Knossos. The name *qasireu,* which has been interpreted as *basileus,* has been identified in several cases and it is always connected with a group of metalworkers and dedications to the goddess[802]. The name for king in the same tablets is *anax* and *basileus* seems to be the name for the master of a guild of metalworkers who was also responsible for the religious ceremonies connected with their profession.

The meaning of the "sacred marriage", or *hieros gamos* as the procreative religious act par excellence, has been recognised in many anthropological studies and its origin probably comes from the Mesopotamian religious tradition[803]. It is the ceremonial repetition of the primordial union between the Hesiodic Gaia (Earth) and Ouranos[804] (Heavens or Sky) which was responsible for the creation of the whole world[805]. It is the re-enacting of the cosmic hierogamy, the life engendering

[801] Burkert, *Greek Religion: Archaic and Classical*, p. 241.
[802] Bredow, "Der *qasireu* in der Gesellschaftsstruktur des pylischen Staates," pp. 28-35.
[803] Lambrinoudakis, "Merotraphes" p. 53. Also in Robert Koehl, "The sacred marriage in Minoan religion and ritual," in *Aegaeum 22 "POTNIA. Deities and Religion in the Aegean Bronze Age" Proceedings of the 8th International Aegean Conference Göteborg, Göteborg University, 12-15 April 2000*, ed. Robert Laffineur and Robin Hägg (Liege: University of Liege, 2001).
[804] Hesiod, *Theogonia*, 126 ff.
[805] "La hiérogamie est un acte de Création: elle est a la fois cosmogonie et bio-gonie, a la fois Création de l'Univers et création de la Vie." Eliade, "La Terre-Mere et les Hierogamies Cosmiques," p. 76.

the union of Heaven and Earth that facilitates nature's rebirth[806]. In Greek art, it has been depicted in numerous cases, the best known being the scene of the unveiling of Hera, by removing the *peplos* (veil) with her own hands in the assembly of the gods depicted on the Parthenon frieze. The hidden meaning of this revelation can be understood in connection with the myths[807] where there is a very vivid description of the "sacred marriage" between Hera and Zeus.

The ritual has been interpreted as the acceptance of the worship of the god Dionysos by the city of the Athenians and the participation also enhanced the consciousness of the initiates as citizens of Athens as Athenians[808]. The queen – or an exceptional and significant female figure like a princess- is perceived of as a symbol of the city itself, and the conquest of the queen is homologous to conquest of the city[809].

A later author, Maximus of Tyre, wrote about this topic at great length (*Dissertationes*, 30): Only the peasants seem, he said, to have instituted festivals and initiations; they are the first who instituted dancing choruses for Dionysus at the wine press[810].

The *Lenaia* is known from at least two sources[811] that were performed in "exemplary" *lenos,* meaning high quality and constructed buildings that were used for the pressing of grapes and the storage of wine in the specially-made *pithos,* which were large jars placed partly buried in the ground[812]. In these jars, the grape juice would become wine and the unique ability of the Earth to transform material from one state to another, to transmute grape juice in a spirit would be celebrated by the opening of the *pithoi* on the day of *Pithoigia* at the end of winter.

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[806] Mircea Eliade, *Patterns in Comparative Religion*, trans. Rosemary Sheed, 1996 ed. (Lincoln and London: University of Nebraska Press, 1958), pp. 354-361.
[807] Diodorus Siculus, 5, 73
[808] Burkert, *Greek Religion: Archaic and Classical*, p. 241.
[809] This conception is evident in all the ancient and more recent myths and legends about the princess of the castle or the tower and the way to her conquest (in most cases conceived in the form of a labyrinth as in the Minoan myth of Ariadne and Theseus) and it signifies the conquest of the city or the castle, see in Levy, *The Gate of Horn: A study of the religious conceptions of the Stone Age and their influence upon European thought*, pp. 246-249. The female figure is the personification of the Mother-Earth the creator of the inhabitants and the owner of the land where the city is formed. The Greeks and especialiy the Athenians were very keen in acclaiming their autochthony meaning that they had sprang from the earth and had rights over that particular piece of land. Eliade, "La Terre-Mere et les Hierogamies Cosmiques," p. 75.
[810] Nilsson, *Greek Popular Religion*, p. 23.
[811] Pickard-Cambridge, *The Dramatic Festivals of Athens*, p. 37.
[812] Kerenyi, *Dionysos. Archetypal Image of Indestructible Life*, pp. 298-299.

As has been stated already among the few finds, from the small-scale excavations that were undertaken in the towers of Siphnos at the beginning of the last century by Dragatsis[813], were potsherds dating from the archaic to the Roman period that belonged to large *pithoi* and a double inlaid structure was found on the ground floor that could have been the pressing tank for grapes[814]. From the few findings, it has been suggested that these *pithoi* were decorated with care, indicating that they were not just used for domestic purposes.

There is further evidence to suggest that Dionysos and the opening of the wine jars was connected with the ability to transform and/or transmute the ability of the Earth that has been ascribed to Dionysos. It is reported by Pliny the Elder that on the island of Andros after the introduction of the Julian calendar, the night of the fifth of January[815] was set for attending a Dionysian miracle, the transformation of the water from a certain spring into wine for the seven days that the festival was devoted to *Eleutherios Bacchus*, a common epithet for Dionysos used in the Roman period[816].

Figure 49. The Lenaia ritual

[813] Dragatsis, "The Island Towers: the case of Siphnos (In Greek)."
[814] Ibid.: pp. 147-172.
[815] The same date that, under the Orthodox Christian calendar, the miracle of the marriage in Canaan is celebrated according to which Jesus transformed the water in the jars into wine. (I owe this remark to Professor Ian Campell).
[816] Pliny the Elder, Natural History II 106, XXXI 13.

The same type of jars, the *pithoi,* was also used as sepulchral jars for burials[817]. They are depicted in various archaic and classical vases with either their use as funeral or as wine jars. Hesiod suggested in his Theogony (726 ff.) that under the surface of the earth, there was a huge jar (*pithos*) which ended in a narrow mouth from which grew the roots of the world. This mixture of uses, which seems completely irrelevant at first, could be explained by the fact that the jar symbolises the chthonic world from which plants grow, the seeds of any kind germinate, and where the dead dwell and thus it is strongly connected with the transcendental powers of the earth[818]. The souls of the dead are often depicted as winged *eidola,* flying from the mouth of the *pithos* and it has been suggested that the mouth of the jar was the entry to the other world[819] but also an exit from the underworld. The mouth of the vase is perceived as "the entrance to a subterranean region but also the passage to an upper world"[820].

Figure 50. The eidola (souls or ghosts) of the dead coming out of a pithos under the guidance of Hermes

These beliefs are magnificently demonstrated in the rituals performed on the second day of the *Anthesteria,* known as *Pithoigia,* when the souls were believed to be circulating freely among the living and the young girls were swinging above the open mouths of the *pithoi.* The custom

[817] E. A. S. Butterworth, *The Tree at the Navel of the Earth* (Berlin: Walter De Gruyter & Co., 1970), p. 27.
[818] "The reason is that the ancestors of the ancient Greeks used to bury in the earthen floor of their storerooms huge jars containing the fruits of the earth and also the corpses of the household's dead." This is the view exemplified in Vernant, *Myth and Thought among the Greeks*, p. 179.
[819] Jane Ellen Harrison, *Prolegomena to the Study of Greek Religion* (Cambridge: 1903), pp. 276-285, 640.
[820] Butterworth, *The Tree at the Navel of the Earth*, p. 30.

of the "swing" was performed in Siphnos until very recently (at least until after the Second World War) and is evidence of how strong and persistent this Dionysian ritual has been on this island.

Figure 51. The ritual of the aiora or swing over a pithos depicted on a pithos of the fifth century BC

The interpretation of the meaning of this ritual can be associated with the ability of the earth to generate and facilitate the transcendence between the different levels of existence and the intention of the young female initiates to acquire this ability by "sympathy" and to come of an age when they can also give life through birth. In the philosophical and mystical religious thought of the Greeks[821], life on earth was only one of the existential levels and whether the soul was arriving from the stars[822] or the ancestors and the underworld, it had to be able to transcend through the different existential levels by making use of the appropriate gates and passages.

The spouse of Dionysos Ariadne is the mistress of the labyrinth who gave the *mitos,* the thread, to Theseus, the Athenian prince, to lead him out of the labyrinth after he killed the Minotaur in Crete. Ariadne also gave Theseus a sword, which has been interpreted as symbolising the power of

[821] Cornford, "Mystery Religions and Pre-Socratic Philosophy," passim.
[822] Plato, *Timaeus*, trans. Donald J. Zeyl (Indianapolis, Cambridge: Hackett Publishing Company, 2000). 40e "...he [the demiourge] divided the mixture into a number of souls equal to the number of stars and assigned each soul to a star."

divine regeneration[823]. According to Homer[824], the labyrinth is the pathway marked by Daedalus on a dance floor described as a spiral or circular ritual movement[825]. The spiral diagram concluded in the centre "for the convolutions of Ariadne's dance in Knossos, the fertility dance of the shield bearing man and the maidens of our Copenhagen signet, with all the implications of search and the discovery or re-creation of life"[826]. Ariadne is the chthonian goddess who led Theseus safely along the daedal paths towards the internal parts of the earth and who becomes the consort of Dionysos, after she has been abandoned by Theseus in Naxos.

The symbol of the labyrinth has been used in many different cultures around the world from prehistoric times[827]. The petroglyphs and the labyrinth pictographs that have been found in northwest Spain and Cornwall have been associated with Bronze Age mining in these areas[828]. The labyrinth is recognised as "a cult symbol of the miner's self concept"[829] and it has been assumed that it was brought into these regions by prospectors and miners seeking ores[830]. The name labyrinth is believed to connote galleries of stone[831] and it has been connected with the name of the Athenian mining area "Laurion" as they both derive from the word *labra* (λάβρα) meaning gallery and mine, according to lexicographers, Hesychius and Suidas[832].

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[823] Lambrinoudakis, "Merotraphes" pp. 334 ff. The author suggests that the bronze weapons like the sword and the shield of Argos and the bronze caldron of the tripods were containers and symbols of the regeneration power of the divinity representing an idea which is demonstrated more specifically in the myth and rituals of Dionysos.

[824] Homer, *Iliad,* 18.590-592

[825] S. H. Lonsdale, "A Dancing Floor for Ariadne (Iliad 18.590-592): Aspects of Ritual Movement in Homer and Minoan Religion," in *The Ages of Homer: A Tribute to Emily Townsend Vermeule*, ed. S. P. Morris (Austin: University of Texas Press, 1995), pp. 273-284.

[826] Levy, *The Gate of Horn: A study of the religious conceptions of the Stone Age and their influence upon European thought*, pp. 220, 247, fig.93.

[827] There is extensive bibliography on this very interesting subject of which the most conclusive is Kern, *Through the Labyrinth: designs and meanings over 5000 years.*

[828] Ibid., p. 67.

[829] A quotation from Helmut Birkhan "Laborintus – labor intus; Zum Symbolwert das Labyrinthus im Mittelalter" in Festschrift fur Richard Pittioni zum 70 (Geburtstag, Vienna. 1976), pp. 423-54 cited in Ibid. p. 67.

[830] Ronald W. B. Morris, *The Prehistoric Rock Art of Argyll, Dolphin Archaeology Series* (Poole, Dorset: Dolphin Press, 1977), pp. 11-15. "In nine out of ten cases in Southern Scotland, where cups-and-rings are found on outcrop rock (part of the earth's surface), they are within about ten kilometres (six miles) of a place where copper or gold or their ores has been worked at some time. Many archaeologists have suggested that these carvings were used, perhaps in a magical or religious way, in the search of our earliest prospectors for these metals [...] they were probably carved between about 1800 and 1500 BC."

[831] Levy, *The Gate of Horn: A study of the religious conceptions of the Stone Age and their influence upon European thought*, p. 247. The author gives many references on the subject.

[832] Conophagos, *Le Laurium Antique*, p. 59. See the note at the end of the page.

The pattern of the labyrinth has also been associated with the sacred marriage and there are several incidences of evidence to suggest this. The best known is the Etruscan pitcher from Tragliatella, where two copulating couples are depicted in close proximity to the labyrinth pattern. The scene was referred to as the "holy wedding" that took place between Ariadne (the earth or chthonian goddess) and Theseus after the labyrinth adventure[833].

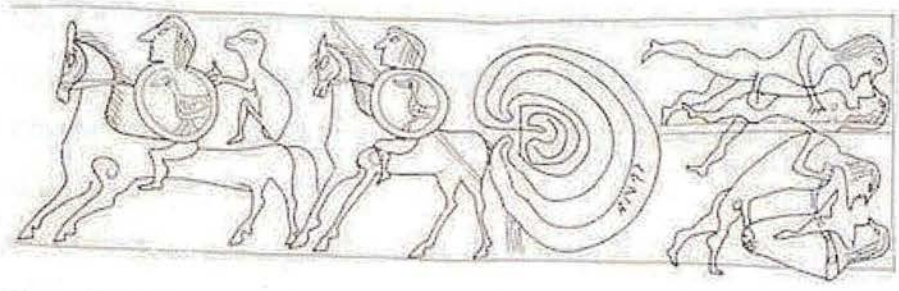

Figure 52. Part of the scene depicted on Tragliatella vase

The labyrinth symbolises the "penetration into the womb of the Mother Earth" and that could explain the use of this symbol by the miners who were actually penetrating the earth in their search for ores to extract[834]. Smelting of the ores was also understood as a sacred sexual union, a "sacred marriage"[835].

Further evidence of these connections is the peculiar Dionysian cult that took place in Asia Minor and Cyprus[836], where a young man or a youth imitated a woman in labour, so recalling the labour pains of Ariadne-Aphrodite dying in childbirth[837]. The goddess was worshipped in Amathus (a city famous for its mines in antiquity) under a masculine name and she was depicted as having a beard[838].

According to Kerenyi, the miscarriage and death of Ariadne veiled the birth of Dionysos by the mistress of the underworld[839]. The labour of another goddess, the great Rhea, was the reason for the appearance of the

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[833] Kern, *Through the Labyrinth: designs and meanings over 5000 years*, p. 31.
[834] Eliade, *The Forge and the Crucible*, pp. 41-42. The name used for the galleries opened by the miners in many languages is the same with the name for uterus.
[835] Ibid., p. 60.
[836] In Cyprus the ritual is performed in Amathus, an Iron Age settlement that flourished during the archaic period mainly because of the exploitation of the Kalavassos mines and the cosmopolitan products of their goldsmiths, see in Pierre Aupert, "Amathus during the First Iron Age," *Bulletin of the American Schools of Oriental Research in Jerusalem*, no. 308 (1997).
[837] Plutarch, Theseus XX 3-4, cited as a story quoted from the historian Paion of Amathus.
[838] Kerenyi, *The Gods of the Greeks*, p. 81.
[839] Kerenyi, *Dionysos. Archetypal Image of Indestructible Life*, p. 277.

Dactyloi (Fingers) which were metallurgists, obstetricians and magicians and servants of the Great Mother, exactly like the Kouretes, the Korybantes and the Telchines[840].

The imitation of labour by a male is part of the rituals connected with mining and smelting operations in many cultures and is indicative of the obstetric nature of mining[841]. The image of the Earth Mother pregnant with every kind of embryo according to Eliade, preceded the image of Nature and that of Sofia in the Christian and alchemical traditions;[842] and after examining various myths, rites and customs connected with metallurgy, the "central mythical theme" is that metals are derived from the body of a god or from an immolated divine being[843].

According to a later variant of the myth of Ariadne, attested to by Pausanias[844], Ariadne was buried under the temple of Cretan Dionysos in Argos, in the same place where king Acrisius had imprisoned his daughter in a bronze chamber (θάλαμος)[845]. The daughter was Danae, and her prison is described as a tower in ancient literature. It was in this bronze tower that Zeus visited Danae in the form of gold rain, and from this union, Perseus was born. The evident similarities between Perseus and Dionysos, like Ariadne and Danae, as these appear in mythology and in ritual processions, have been interpreted as presenting identical deities and as they appear in pairs, they are considered as being androgynous derivers of the Great Mother[846].

The theme of the androgynous or the hermaphrodite which is found also in the image of the effeminate Dionysos has been interpreted as an archaic and universal representation of totality, the coincidence of the opposites, "la totalité, la coincidence des contraires, la *coincidentia oppositorum*", and primordial, unconditional perfection. It is the most important and unique property of the Great Mother, who could produce and give birth on her own without the help of a male spouse. Gaia is the

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[840] Rhea supported herself during labour to Zeus with both hands to the soil and "the mountain at once brought fourth as many spirits, or gods, as the goddess had fingers" in Kerenyi, *The Gods of the Greeks*, pp. 83-84. On the metallurgical divine clans see in pp.86-87.

[841] Eliade, *The Forge and the Crucible*, pp. 33, 57, 68.

[842] Ibid., p. 52.

[843] Ibid., p. 69.

[844] Pausanias 2, 23,7-8.

[845] The word chamber, θάλαμος in Greek, refers both to the burial chamber and the bridal chamber.

[846] Lambrinoudakis, "Merotraphes" p. 343.

primordial great goddess and the Mother of All, whose properties and powers have been attributed to Dionysos[847].

Hermes

A marble herm that was found in Kastro in the nineteenth century is one of the best known sculptures from Siphnos and it is considered to be also one of the best preserved archaic steles ever found[848]. This ithyphallic herm dates from the end of the sixth century and traces of ancient works of restoration suggest it was repaired probably during the classical period (fifth century BC)[849]. The attempt to restore the damaged herm probably indicates that it was a particularly valuable and important sculpture in antiquity and probably served as a ritual object.

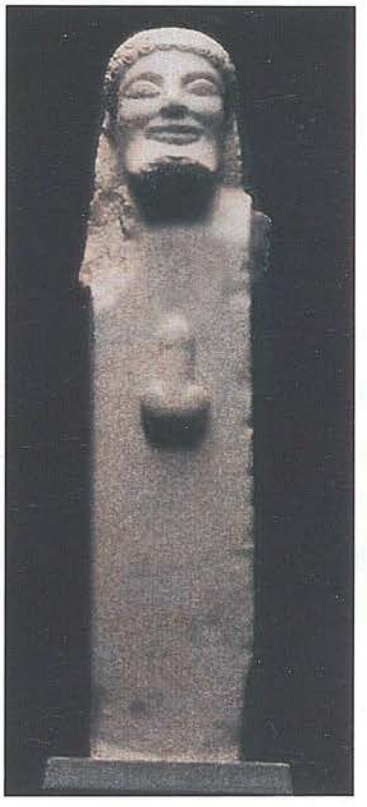

Figure 53. The archaic herm that was found in Siphnos

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[847] On this very interesting subject the basic reference is Eliade, "La Terre-Mere et les Hierogamies Cosmiques," pp. 78-79. «Etendez que l'androgynie devient une formule générale pour exprimer l'autonomie, la force, la totalité; dire d'une divinité qu'elle est androgyne, c'est dire équivalemment qu'elle est l'être absolu, la réalité ultime.»

[848] The herm is now kept in the National Archaeological Museum in Athens and has been published in K. A. Sheedy, "Some observations on three examples of archaic sculpture found on Siphnos," *Mitteilungen des Deutschen Archaologischen Instituts. Athenische Abteilung (Ath. Mitt.)*, no. 107 (1992): esp. pp. 112-114, Pl. 23.

[849] On the repair and significance of this herm see Eurydice Leka, "Herm from Siphnos restored in Antiquity," in *Proceedings of the 1st International Sifnean Symposium Siphnos 25-28 June 1998*, ed. Tz. Zervoudakis (Athens: Society for Sifnean Studies, 2000), pp. 324-342.

The first known herms come from Attica[850] and date from the end of the sixth century BC[851]. They were square pillars of stone or bronze that served as road and boundary markers between Athens and other cities in Attica. These stone steles with sculpted genitalia (ithyphallic) and a bust of the god Hermes represented as a bearded man, were placed in front of private houses and in significant places throughout the city and had a profound religious and political significance for the Athenians[852]. Many herms were dedicated in the Athenian Agora and often inscribed with advertisements and moral maxims. As we can deduce from archaic vase paintings, private sacrificial rituals also took place in front of these herms[853].

The herm from Siphnos was probably used as the above described kind of cult object, and this suggests a cult of the god Hermes on the island of Siphnos during the archaic and classical period that, according to archaeological evidence, survived up to the Hellenistic era[854].

Hermes was the herald or the messenger of the gods, protector of arrivals and departures, a god of the passages. His name, according to certain etymologists, probably derives from the word *herma,* which means a heap of stones and was an elementary form of territorial demarcation[855]. It is remarkable that an immovable boundary-stone has been transformed into the symbol of the god of "the transgression of boundaries"[856].

According to myth, he is the son of Zeus and a nymph, Maia (protector and attendant in childbirth) but he retains certain attributes of the pre-Homeric divinities like the ithyphallic form and the possession of a

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[850] According to Thucydides 6.27.1.

[851] I. Triande, "Archaice Hermaice Stelaes," *Archaeologikon Deltion* 32A (1977): pp. 116-122.

[852] Robin Osborne, "The erection and mutilation of the Hermai," *Proceedings of the Cambridge Philological Society*, no. n.s. 31 (1985). In this article the significance of the herms for the Athenians is presented and it is argued that they were of a "profound and precise importance [...] for the Athenian individual and social identity". The herms are compared and equated with the Dionysiac mask as points "at which a man became divine" and recognised as important point of access, a point at which a man had to face himself in the face of the herm before departing to "face and fight the other", pp. 64, 65 and 67.

[853] Burkert, *Greek Religion: Archaic and Classical*, p. 156.

[854] This view is expressed in Norman Ashton, "A unique bronze coin of ancient Siphnos," in *Proceedings of the 1st International Sifnean Symposium Siphnos 25-28 June 1998*, ed. Tz. Zervoudakis (Athens: Society for Sifnean Studies, 2000), p. 335. Also in Leka, "Herm from Siphnos restored in Antiquity."

[855] This interpretation is contradicted in Osborne, "The erection and mutilation of the Hermai," p. 48.

[856] Burkert, *Greek Religion: Archaic and Classical*, p. 156.

magical rod, which made him the least "Olympian" of the gods[857]. He is described in the Iliad as the best companion of man and alike by Aristophanes[858]. Hermes' abilities to orient himself in the dark, to move about with the speed of lightning, combined with the knowledge of the passages, make him a *psychopompos* (soul-sender) who shows the souls of the deceased the way to Hades and accompanies them, without him being a specific god of the dead. Therefore, he is the god that can move freely through "the three cosmic levels"[859]. His ability to transcend the subterranean, the terrestrial and the celestial worlds is implicit in the form of the herms that penetrate the earth to their foundation, belonging and marking the surface of earth while rising towards the sky[860]. Hermes, a wanderer himself, is the protector of travellers and transitions and the herms were erected in front of the gates, whether these were city gates, the entrance private houses, or graves, that is, the gates that led to the underworld[861].

As the messenger of the gods, he is carrying the herald's staff, which is the image of copulating snakes, taken over from the iconography and tradition of the Ancient Near East. He is also the interpreter, (*hermeneus*, *hermeneutics*) since he is responsible for successful communication with enemies and strangers, and he was later allegorically equated with *logos*[862].

According to the description that Pausanias gives in his journey around Greece (V, 11, 8), in the base of the infamous statue of Zeus in Olympia, the pair of Hermes and Hestia, the goddess of the Hearth, is depicted; it has been interpreted as an expression of archaic thought attempting the spatial (and social) organization of polarities in "a relationship which opposes and unites, in a single contrasted couple joined in unbreakable friendship, the goddess who immobilizes space around a fixed centre and the god who is completely and everlastingly mobile"[863].

Apart from Hestia, the god is connected with the birth of Dionysos when he was sent by Zeus to save the embryo of blazing Semele (see above

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[857] Eliade, *A History of Religious Ideas*, p. 274.
[858] Iliad 24. 334-335 and Aristophanes, *Peace*, 392.
[859] Eliade, *A History of Religious Ideas*, p. 275.
[860] Claude Berard, *Anodoi : essai sur l'imagerie des passages chthoniens*, vol. 13, *Bibliotheca Helvetica Romana* (Rome: Institut Suisse de Rome, 1974), p. 70.
[361] Farnell, *Cults of the Greek States*, vol. V, p. 62.
[862] Burkert, *Greek Religion: Archaic and Classical*, p. 158.
[863] Vernant, *Myth and Thought among the Greeks*, p. 161.

in Dionysos). Dionysos also is depicted on pitchers[864] in the form of an ithyphallic herm which was used as a cult objects and is sometimes undistinguishable from Hermes[865]. Dionysos in the form of a herm is a common motif in classical sculpture[866], and is probably an advanced interpretation of the archaic Dionysos ritual stele. The form of a stele or herm, appears to penetrate and at the same time spring from the earth[867]. It is supposed to represent the ascent (*anodos*) and descent (*kathodos*) between the worlds which is the ability to transcend that both these gods were said to possess[868]. The image on a vase dated around 500 BC attributed to the Berlin painter, now in the Louvre, where both Dionysus and Hermes are depicted attending the same banquet, has been interpreted as "superimposing two complementary and normally separated spaces"[869] but, as has been argued above, both gods are transcending boundaries, "making categories merge and contraries meet".

The attitudes ascribed to Hermes in the archaic period "will be continually reinterpreted and will end by making Hermes an even more complex figure, at once civilizing hero, patron of knowledge, and paradigmatic image of the occult gnosis"[870]. The god is one of the few that survived of Christianity, under the name of Hermes Trismegistus, through alchemy and hermeticism, well into the seventeenth century.

Alchemy has been recognised as the knowledge of ancient metallurgical workings (mining and extracting metal from ore).This connection becomes explicit when the practices of metallurgy are analysed against the alchemical procedures once deprived from their symbolic codification[871].

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[864] Hoorn, *Choes and Anthesteria*, p. 116.
[865] Kerenyi, *Dionysos. Archetypal Image of Indestructible Life*, p. 307.
[866] Dionysos as herm motif has been copied in iconography on vases Hoorn, *Choes and Anthesteria*, p. 116.
[867] Daraki, *Dionysos et la deesse terre*, p. 59 (Greek edition).
[868] The similarities of the two gods in ascending the "chthonian passages" are not fully explored but some aspects are presented in Ibid., pp. 57-59.
The connection of Dionysos with ascend in Berard, *Anodoi : essai sur l'imagerie des passages chthoniens*, pp. 44, 22-23, 102.
[869] Jean -Louis Durand, Francoise Frontisi-Ducroux, and Francois Lissarague, "Wine: Human and Divine," in *A city of Images* (Princeton: Princeton University Press, 1989), p. 129.
[870] Eliade, *A History of Religious Ideas*, p. 276.
[871] Eliade, *The Forge and the Crucible*, passim.

Discussion

The political, social and religious affinity during the archaic period in Greece makes it almost compulsory for research in most subsidiary subjects concerned to be grounded in a multilevel enquiry.

Phratries were vertical divisions in the structure of Greek society[872] that helped to maintain social and civic order and worshipped gods that were recognised by all their members. They had also a very important function in relation to the economy as they could administer large amounts of money and manage people, either citizens or slaves, and undertake big enterprises like the lease of mines in Laurion[873]. The organisation of citizens into phratries meant that they could obtain technical knowledge (know-how), apply and improve technological innovations of their time, and retain this knowledge within their members through the initiation rites. Since there was no clear distinction between the sacred and the secular but on the contrary, everything (and especially technological knowledge) was considered to have a sacred dimension, the religious function of the phratries was equally important to their political and economic role. The phratries were powerful social organisations with many members that could manage the difficult task of prospecting and extracting the metals, could provide the skilled supervisors and afford the trained slaves for mining, they built the appropriate constructions for melting the ores and undertook the other metallurgical work as required; and if the towers needed to be built for any reason, the phratries were the most obvious section of society that would have the organisational as the financial means and technical skills to erect them.

The analysis of the Siphnian pantheon has shown that all the gods that there is evidence of their cult in Siphnos, could have been connected with metallurgy and this is what would have been expected of a small island which totally depended for its prosperity on the exploitation of its mineral deposits.

The core and at the same time the most ancient of the Siphnian cults appears to have been the worship of the nymphs: the cult of the nymphs had a direct connection with the cult of Artemis (and the later attested to cult of

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[872] Expression used in Snodgrass, *The Dark Age of Greece*, p. 387.
[873] See above in footnotes 643 and 645.

Pan), Apollo is referred to as their guide under the name Νυμφηγέτης and Zeus is also intimately associated with many of them. The nymphs though, do above all, represent the primordial properties of mother earth: fecundity and vegetation or generation. The close relation of nymphs with Dionysos is founded on the common grounds of the above inherited properties of the Great Goddess.

All the properties of mother earth have been distributed among the subsequent Olympian gods. Nevertheless, it is Dionysos, the god who, having his origins profoundly rooted in deep antiquity, is the Olympian god who is considered to be the epitome of the old chthonian goddess, the intermediary and consolidator between the old and new religion. The transition took place in the eighth and seventh centuries and this explains the re-introduction of the Dionysian cult as an Olympian god.

Dionysos retained another of the properties of the Earth: the ability to transform, to transmute living creatures from one state or form of existence to another. Dionysos himself is full of transformations and renewals, celebrated through specific rites of passage like the *Lenaia* and the *liknon*. The festivals dedicated to Dionysos have been found in all places where metallurgy was evident and as expected, these festivals were also acknowledged as the most important to be held by these societies.

Dionysos was born prematurely from his chthonian mother, Semele, "lightning was the midwife, thunder our Lady of childbed" and then the premature embryo Dionysos was carried by Hermes to another, a male womb, the limb of Zeus to complete his gestation[874], becoming "twice born"; this has a striking resemblance to the way metals are thought to have been born by the ancients.

The importance of the thunderbolt as the provider of fire is evident in the cult of Zeus. Thunderbolt was the sign of union between the earth and the heavens and its product, fire "in Greeks is seen as first and foremost as a sacrificial fire" the mediator in the communication between men and gods[875].

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[874] Panopolis, *Nonnos: Dionysiaca*, VIII, 396 and 405.
[875] C. Levi-Strauss, *The raw and the cooked: introduction to a science of mythology* (London: Pimlico, 1994), pp. 299-302 (French Edition).

It was the mediator in the bringing of new life, in the form of fire brought from Delos to the people of Lemnos[876].

The power of lightning to give life and regenerate is evident in the myths of the birth of Dionysos and the birth of the human race. The places struck by lightning were called *ενηλύσια,* "places of coming". The most famous of these places was the bridal chamber of Semele on the Acropolis at Thebes[877].

The fact that the thunderbolt is also a meteorological sign of thunder and rainfall has attributed to its significance (if not caused it) and probably accounts for the power over the weather which has been attributed to the metallurgical divine clans.

[876] «...the "new life" in Lemnons cannot begin until this mediation by the fire brought from Delos intervenes to abolish the disunion between the Sun and the island by encouraging a return to the civilised life that results from the combined presence of fire for technology and fire for cooking." In Detienne, *The gardens of Adonis: Spices in Greek Mythology*, p. 97.
[877] Harrison, *Epilegomena to the study of Greek religion*, p. 91.

CHAPTER 7

Verification of the proposed theory on the origin of the Siphnian towers

The previously discussed theories about the origin of the single towers, which form a distinct and characteristic *eidos* and a certain architectural type in the Greek world[878], has not led to the articulation of a coherent theory in which they could be addressed as a group. The identical structural and formal features of the Siphnian towers require a more convincing theory, one that would also account for the variety of their location and their spread and explain the need of so many structures. Although it has been already stated that "the tower [...] cannot be a simple domestic structure such as storage house for grain and fruits"[879] and that the towers "are certainly not always at all closely connected with the agricultural pursuits of residential farmers"[880] even the very recent research persist in suggesting exactly that[881].

The hypothesis that has been put forward in this research is that the towers of Siphnos, when they were initially constructed, had multivalent purposes which were connected with the exploitation and workings of the gold and silver mines of Siphnos. Their multivalency is characteristic of the period in which they were built and can also reflect, and consequently reveal, the intentions of the creators of these monumental structures.

Architecture: eidos and phenomenon of the Siphnian towers

This investigation into the properties of the architectural *eidos* of the towers has revealed the qualities that are inherent in their architecture, which are connected with the spatial perception of the tower and they have been referred to in this research as the architectural qualities of the tower. These are:

a) the unavoidable, almost compulsory reference to the tower for everything that exists around it, which derives from the segregation of this

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[878] Nowicka, *Les maisons a tour dans le monde grec*, p. 16.
[879] Blanckenhagen and Alexander, *The paintings from Boscotrecase*, p. 19.
[880] Osborne, *Classical Landscape with Figures, The Ancient Greek City and its Countryside*, p. 67.
[881] Davies, "Economic Geography of the Ancient Greek Countryside: A re-examination of monumental rural sites on the island of Siphnos" passim.

particular and exceptionally hierarchical form when compared with everything that surrounds it;

b) the surveillance possibilities it offers and the contemplative ability it offers to anyone standing on its summit;

c) the passage through the interior of the tower in the course of a completely defined but also disorientating helix, a transition and an initiation passage, from a referential stage, to one of surveillance and contemplation.

These three qualities of the tower are perceived by the senses and have the potential to create the following notions:

From referentiality: Orientation, unification of an area, centrality and hierarchy, the presence of an imposed and/or protective power;

From surveillance: defence, control, superiority, and contemplation;

From the passage: transition, disorientation, confusion, guidance, and the potential for transfiguration.

The above qualities have also encouraged people's imagination and depending on their cultural context, they have been perceived as a sacred mountain, the gate to the heavens, or the secure passage of the souls, etc. The towers have also been connected with the regenerative act and power, perceived as the medium of contact between the earth and sky, between humans and gods. They have served as symbols of a central authority and rule and as means of displaying the power and wealth of their owners.

The towers of Siphnos were built from the sixth to the fourth centuries BC, a period which was characterised by a gradual reduction in its mineral resources, famous in antiquity, with them finally becoming obsolete. The Siphnians at the peak of their prosperity, which was the outcome of the exploitation of the silver and gold mines on their island, had to face the possibility of losing their resources and this fear was expressed in a question addressed to the Delphian Oracle. In an attempt to propitiate the gods – in this case, Apollo and Dionysos – the Siphnians funded the construction of their infamous Treasury at Delphi and gained the advandage of *promanteia,* which gave them priority over other cities in addressing the oracle[882]. The

[882] *Promanteia* was renewed in the fourth century according to an inscription on the lintel of the entrance in the Treasury of the Siphnians in Delphi, in Daux and Hansen, *Le Tresor de Siphnos*, pp. 22, 135, fig. 93. On the significance of *promanteia* also in Valavanis, "Thoughts on the Dedication of the Siphnian Treasure at Delphi (in Greek with English summary)," pp. 304-305.

response from Pytheia confirmed their fears that their prosperity would eventually (and probably not before long) be all gone.

The above were the social and economic circumstances of the period when the Siphnians began to build the towers. The purpose of these towers, which were very expensive buildings at the time they were built as has been proved, was quite possibly to connect with their expectations of accelerating the generative procedure of the metals. The belief that the metals were generated from the earth like embryos and were fertilised by the impact of the heavens, was a concrete and prevalent concept at that time in the area of Greece and beyond.

Importance of metals

The historical investigation has revealed the significance of metals to the wider Mediterranean area and to Siphnos in particular. Apart from being probably the primary reason for the settlement of the first inhabitants on the island, it was definitely the main reason for their social, economic and cultural development in the Bronze Age and the vital source of their exceptional wealth "the richest of the islanders", as recorded by contemporary authors in the late Archaic and Classical periods.

It has also been documented by the construction of the "most elaborate building in ancient Greece" the Treasury of the Siphnians in Delphi and the white marble pavements of their *agora*, that the people of Siphnos had a preference for displaying their wealth in a way that was not compatible with the aesthetics and ethics of their time, with the taste and more importantly the principles of –"everything in moderation"- as espoused by the other Greeks. They were criticized even at the peak of their wealth for their extravagance and they were humiliated when they lost their prosperity and their mineral resources were exhausted or not extractable (flooded by the sea water).

From the above it is valid to assume that the most advanced techniques of mining would have been applied in order to achieve the systematic and thorough exploitation of the mineral resources, and the rituals connected with the generation of the reserves would have been intensively undertaken in all their grandeur and in the most spectacular way worthy of the Siphnian well-known trend for extravagance.

Concepts about generation of minerals and the prospect of metals

Concepts about metallurgy and mining were presented in Chapter 4. The period examined was from the Bronze Age to the Classical period and beyond. The information has to be traced accurately in spite of the expected mysticism and veil of magic that obscures the craft of the miner and the working of the ores and the metals. The analysis has enabled the reconstruction of the indispensable doctrines and relevant rites of the following beliefs: The rites of initiation for the members of the craft, the cult rituals connected with fecundity, procreation and generation, and also the rituals practised to manifest the transformative or transmutative power that only the divinity possessed and that was essential in mining and extracting workings.

The prospect of the metals and the location of the direction of the veins were connected with knowledge of astronomy and astronomical observations as stated by Agricola[883]. The various petroglyphs (especially those with the sign of a labyrinth) that have been found in proximity to ancient and prehistoric mines, could be an indication of this practice, which would have been accompanied by appropriate rituals[884].

This research has put forward the hypothesis that these rituals could have been the ones known to have been performed in honour of Dionysos. The features and the powers attributed to this god seem to have been linked to the concepts and beliefs relevant to the art of the miners.

An ancient source gives us some unexpected information about the beliefs and the kind of rituals that were performed in antiquity in connection with metal prospecting[885]. Strabo, the Roman geographer, "not in the least fond of myths" according to his own statement, informs us about the "mountain roaming", ορειβασία in Greek, and the "religious frenzies" that were performed "for prognostication by signs, now seeking for metals and

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[883] Agricola, *De Re Metallica. Translated from the first Latin edition of 1556, with biographical introduction, annotations and appendices upon the development of mining methods... from the earliest times to the 16th century*, book 1, pp. 3, 4.
[884] For the connection between labyrinth and astronomy see in Kern, *Through the Labyrinth: designs and meanings over 5000 years*, pp. 32 ff.
[885] Henri Jeanmaire, *Dionysos. Historie du culte de Bacchus* (Paris: 1951), p. 182.

hunting and searching for the things that are useful for the purposes of life..."[886].

Religious performances

The suggestion that some of the Hellenic towers and particularly the round ones could be "édifices sacres"[887], connected possibly to the chthonian divinities, has been made by several authors. The quality of the construction presupposes serious intentions and exceptional technical skills and knowledge. The estimated expense and effort required for these towers to have been built would have been beyond the power and scope of a farmer or any individual islander. The above statements, plus the fact that the circular plan of these structures has been associated, during the period under examination, with Hestia and chthonic rituals[888], indicate that there could have been an intention of giving the towers a sacred purpose.

The towers began being built in the sixth century, which coincides with the second period of the exploitation of the mineral wealth of the island. The first period began during the third millennium, and after the so-called Dark Ages, the second period of intensive exploitation must have begun not earlier than the end of the seventh century. The production of the mines continued from the archaic period up to the late classical in the fourth century. The workings must have been on an industrial scale, since Siphnos was the main provider of silver for the coinage of Aegina in the archaic period[889] and also for Athens before the Laurion mines began their massive production but even after mining had begun in Laurion, the Siphnians continued to export silver to Attica, mainly in the form of ores[890].

The large-scale workings must have been diminishing fast the resources of the island. The agonizing question to the Pythian oracle in the sixth century about the longevity of their prosperity (and their mineral resources) in accordance with the construction of the elaborate and expensive Treasury of the Siphnians in Delphi, are strong indications that

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[886] Strabo, Geography, book 10.3.23.
[887] Nowicka, *Les maisons a tour dans le monde grec*, p. 37.
[888] Robert, *Thymele recherches sur la signification et la destination des monuments circulaires dans l'architecture religieuse de la Grece*, pp. 201-202.
[889] Wagner, "Ancient Gold and Silver mines of Siphnos," p. 151.
[890] Kakavoyiannis and Kakavoyianni, "The Diachronic Relations of Siphnos with Laurion," pp. 191-192.

there were already signs of decline in their resources and the Siphnians would have been anxious to find ways to delay the decline by developing new techniques to generate their resources. The Delphic oracle was widely responsible for the promotion of the Dionysian rituals throughout Greece and it exercised its influence and pan-Hellenic acceptance as an "information centre"[891] to achieve that. It is probable that apart from any available technical knowledge, the Delphic oracle also suggested a fuller endorsement of the Dionysian cult. Under this influence, the Siphnians might have enthusiastically adapted and/or enhanced the already existing rites performed in honour of Dionysos.

The research has brought to light the characteristics of Dionysos: the power of transformation or metamorphosis, generation and fecundity. All these are properties of mother-earth that have been attributed to Dionysos, the very last Olympian God (the thirteenth) after the retreat of the old chthonian (earthen) religion and the introduction of the Olympic Pantheon, the gods dwelling on the highest mountain.

Some of the towers could have served the purpose of being an "exemplary" structure of *lenos*[892], a wine press and storage of exceptional quality where the grape juice would have been stored to ferment and be transformed into wine. The fragments of pithoi that have been found and the cisterns support the argument. There exists also a fragment from an inscription from another Cycladic island, Tenos, which confirms the use of towers as storage for *pithoi* –mainly on the ground floor- known as πιθώνες (pithones)[893]. The towers would have been the ideal place for the Dionysian rituals of the opening of the *pithoi* or other rituals connected with prospecting and mining while also serving other purposes.

The sacred purpose of the towers would also explain the fact that no rural sanctuaries have been located in Siphnos– so common everywhere in the ancient Greek world- in spite of the repeated efforts to identify them during the archaeological surveys of the island[894].

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[891] Osborne, *Greece in the Making 1200-479 B.C.*, p. 206.
[892] Pickard-Cambridge, *The Dramatic Festivals of Athens*, p. 37. Also see above in religion chapter.
[893] IG XII 5,872 "...και του πίθωνος τω εν τω πύργω..." republished in Nowicka, *Les maisons a tour dans le monde grec*, pp. 99.
[894] Papadopoulou, "Thirteen unknown ancient towers in Siphnos," pp. 111-112.

The tendency of the Siphnians for extravagance was demonstrated in antiquity mainly through their architectural achievements[895]. This is evident in the erection of luxurious public buildings on Siphnos while the Treasury in Delphi was designed to achieve acknowledgment from the rest of the Greek cities and to display their status and their difference[896]. The choice of the Siphnians to construct buildings, for any purpose, in the form of a tower, definitely had the intention of making a display and of declaring the prosperity of the island[897].

The large number of towers indicates that they were also a product of collective work. We know that the wealth of the island was distributed equally to all its citizens and this presupposes a social stratum widely acceptable and capable of accomplishing money transactions. It has been shown that the most plausible social body to achieve the above was the phratries. The phratries were also owners of "buildings for the purposes of their own meetings and cults" and there is evidence that building projects (probably for the above mentioned purposes) were carried out and financed by the phratries[898]. The great cost of the towers could have been met by the collective funds of these extended families and/or their subgroups which had social, political, economic and religious[899] authority. The religious activities of the phratries, as it has been proven, were also performed in Siphnos, and as it has been suggested, "Dionysos had come to be associated with the Apatouria at least by the classical period"[900].

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[895] Valavanis, "Thoughts on the Dedication of the Siphnian Treasure at Delphi (in Greek with English summary)," p. 305.
[896] Osborne, *Greece in the Making 1200-479 B.C.*, p. 100.
[897] When a local community itself undertook a major building project, its decision to use local stone may not have been simply an economic necessity, but also a pointed declaration of the self sufficiency of that community; through its monumental building activities the community put itself, its strength and its unity, in display. The temple of Aliki at Thasos and the tower traces can serve as an example. Ibid., p. 102.
[898] Lambert, *The Phratries of Attica*, p. 193. In one honorific phratry degree from 305-280 BC "...two members of a distinquished phratry family had apparently donated two hundred drachmas toward a phratry building project."
[899] The nature and extend of the religious activity in the phratries is the subject of an entire chapter in Ibid., Religion and Officers pp. 205-225. More specifically in p. 223 "It seems that the group-specific apects of phratric religious activity, and therefore much of the inscription-producing activity may have tended to take place in the subgroups, while religion in the phratries themselves expressed the commonalities of phratry membership at the Attic and super Attic levels."
[900] Ibid., p. 216.

Lightning attraction

The condition of the limestone and marble blocks of all the towers on Siphnos is very poor. Almost all the blocks of the masonry are broken in their middle section and most show several cracks. This is not what one would normally expect of limestone blocks of this size that are not supporting any weight since most of the upper structure collapsed or was stolen or reused a long time ago.

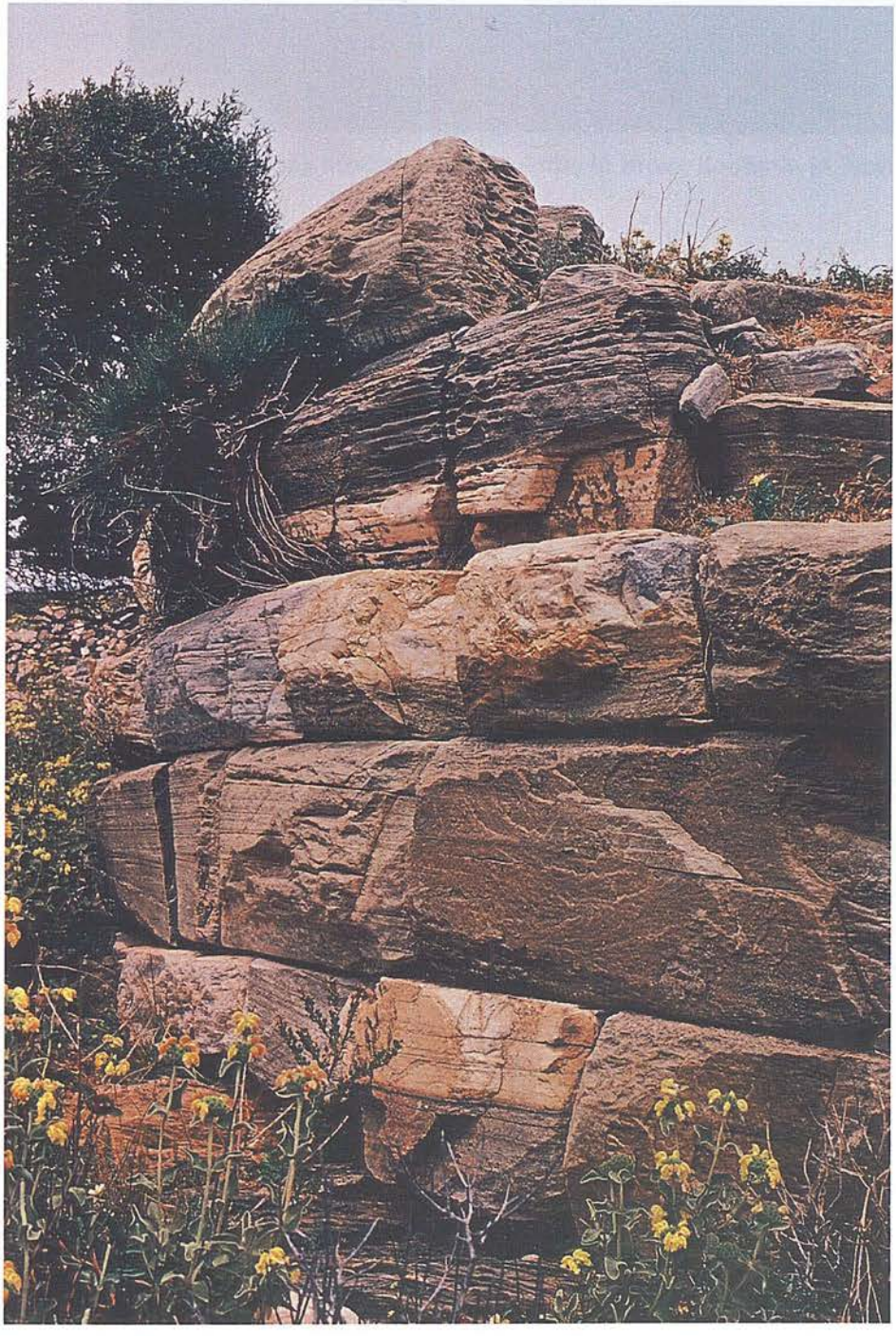

Figure 54. The tower known as Agios Ioannis Pharos in Siphnos. Numerous cracks on limestone blocks.

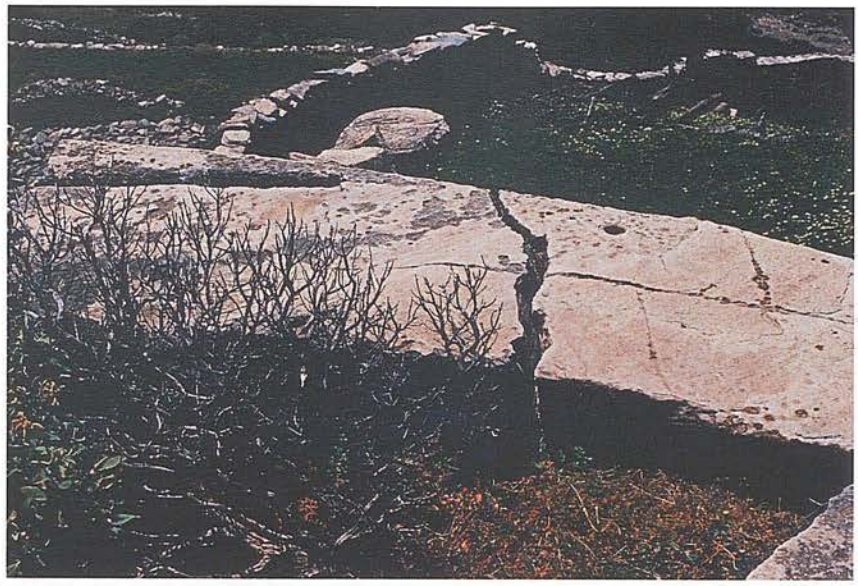

Figure 55. Massive block cracked in the middle in tower Kastania in Siphnos

The most likely explanation is that the towers were struck repeatedly and for quite some time by lightning and most probably, they still are. The breaking of limestone blocks, which actually explode from their centre when wet and hit by lightning, is a well-known chemical phenomenon, responsible for the collapse of several ancient high buildings[901].

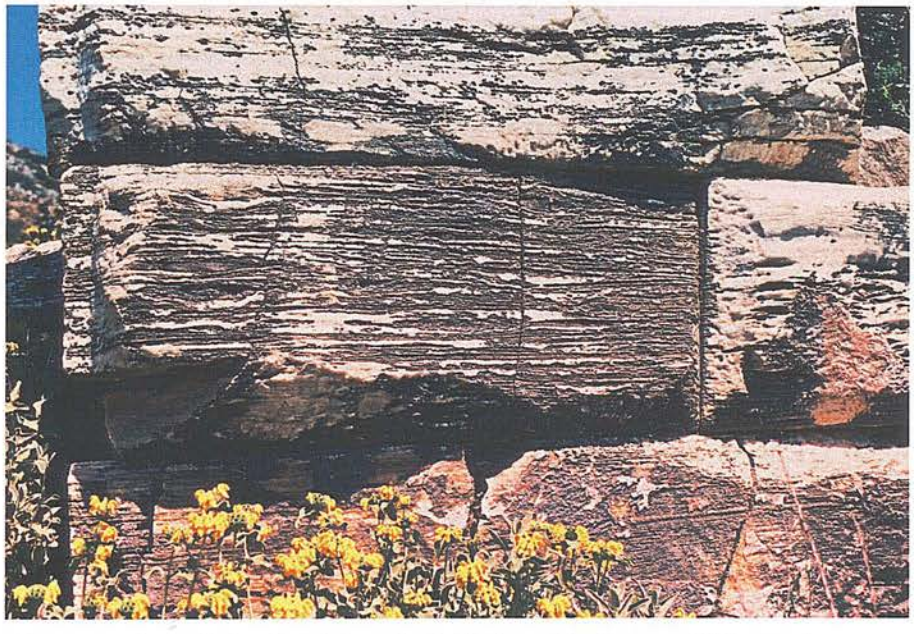

Figure 56. Damage from lightning (thunderbolts) on the tower of Kastania

[901] The best known example is the destruction of the tower of Agia Marina in Kea. The explosion is due to this physico-chemical phenomenon which has been brought to my attention by the Professor of History of Architecture in the National Technical University in Athens, Professor Manolis Korres.

The ground on which the towers stand contains veins of metalliferous oxides which have conductive properties, while the material that they are constructed from is limestone or marble. Limestone acquires conductive properties when it gets wet, i.e. from rainfall and high humidity as before or during a thunderstorm. Their proportions and the substance of the towers suggest that lightning would have always been attracted to them. Whether there was a kind of lightning rod that could have diverted any electrical discharge of lightning, remains to be investigated. The problem of whether or how, ancient Greek monuments were protected from lightning has not been addressed by archaeologists, and therefore, the finds (if any were left) would have not been easy to identify[902].

The towers were erected continuously for about three hundred years and were compared in power to that of Apollo[903] in a hymn composed in the third century, probably an indication that these towers were considered a display of strength in antiquity. This could suggest that they might have provided a kind of protection; lightning protection might have consisted of wooden (when wet, it can also be a conducting material) or metallic rods and it would not have been too difficult to incorporate them into the towers. Although no evidence has been found on the towers of Siphnos, there is a description of a tower in Andros by an English traveller in the nineteenth century, stating that "on the outer wall of the building appear four square shallow furrows running from top to bottom, which at first sight appear to have contained drain pipes from the roof, but then they are too carefully executed for that"[904]. The tower of St. Petros in Andros has been dated to around the sixth century and it has been suggested that it was built to defend the iron mines in the area[905]. These rods, as mentioned above, would have consisted of metal or wood and they cannot be expected to have survived.

In any case, whether carrying lightning rods or not, the towers themselves, by attracting lightning, would provide the mining areas with a very efficient network of rods, resulting in the protection of the miners and the

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[902] The issue has been discussed with Professor Manolis Korres who was convinced that the ancient greeks knew nothing about electricity and could not have built lightning rods. The opinion of the author is that this remains to be investigated.
[903] Kallimachos, Hymn to Delos, 23-36.
[904] Bent, *The Cyclades*, p. 302.
[905] Theophil Sauciuc, *Andros. Untersuchungen zur Geschichte und Topographie der Insel* (Wien: A. Holder, 1914), fig. 38.

workings; hazards caused from lightning are still a very common phenomenon in mines[906].

The religious meaning of lightning was also of great importance, as has been demonstrated. Thunderbolt has seen as having fecundity properties that were required for the generation of metals and it served as a sign of a sacred marriage. In more philosophical terms, lightning provided the fiery element that was the presupposition and the "material cause", according to Aristotle[907], of the vaporous exhalation which was imprisoned within the earth and that resulted in the generation of all metals.

Fire is the mediator for "new life" and the element that makes possible the re-union of earth and sky, the manifestation of the connection between gods and men. The towers attracted lightning, which is the prime sign of this union and the main provider of fire from the heavens towards the earth, thus providing a passage for the fire, serving the purpose of a transition path. It can be suggested probably, that the name πύργος (pyrgos) could derive from πυραγός (pyragos), the άγειν of πύρ, meaning the passage or the transmitter of fire. This interpretation would also explain the use of the word πύργος (pyrgos) tower, by Pythagoras to describe the central fire of the cosmos[908].

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[906] It has been proved that in order to protect objects that are close to the surface of earth like the entrances of mines the best system for lightning protection is provided by a network of rods scattered around the object under protection. See in E. M. Bazelyan and Yu P Raizer, *Lighting Physics and Lightning Protection* (London: Institute of Physics Publishing, 2000).

[907] Aristotle, *Meteorologica*, Book I, 2.

[908] See in Chapter 5, footnote 484.

Figure 57. Map of Siphnos with the visibility connections between the towers

Topographical network

The towers were placed by the author with the help of an experienced topographer on a three-dimensional digital map using the Geographical International System software in order to establish and check their visual interconnections[909]. (Figure 57. Map of Siphnos with the visibility connections

[909] The application of the software was performed by the Professor of Topographical Studies at the Piraeus University Dr. Doganis. The study was preliminary and for the final project it would be required a more recent GPS survey on the field, including the towers that have been located since 1990 and excluding the ones that have been incorrectly considered as

between the towers). The original height of the towers has been estimated according to the suggestion made by Young that their height was about two and a half times their length (in this case, their diameter)[910]. The results were quite impressive, according to the Greek topographers, and they have been confirmed by the scientific team of the Ministry of Culture which has been surveying the archaeological sites of Siphnos for the last eight years and has produced a digital map[911].

The towers formed three distinct triangular topographical networks that designated the previously identified mining areas (by Bassiakos in 1982) (Figure 58. Map indicating the location and direction of the metalliferous areas in Siphnos)[912].

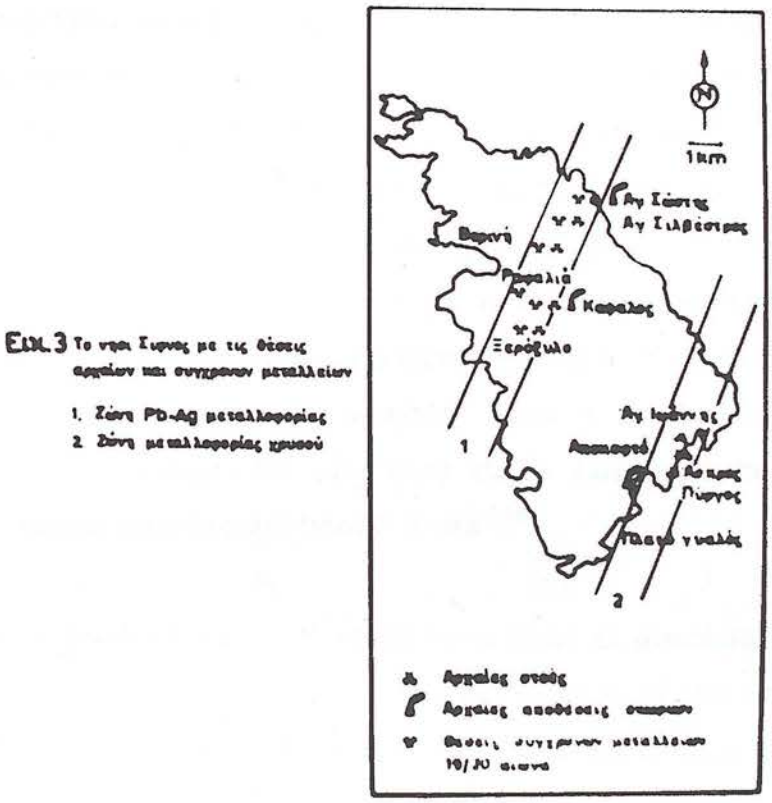

Figure 58. Map indicating the location and direction of the metalliferous areas in Siphnos

towers. The present research has been based on the map of Ashton published in Ashton, *Siphnos. Ancient Towers B.C.*

[910] Young, "Studies in South Attica: Country Estates at Sounion," p. 135.

[911] The visual interconnections have been confirmed by G. Makris who is the topographer of the surveying team in Siphnos, during the Symposium in July 2006. The team consists of archaeologists and surveyors and part of their work has been published in G. Makris and E. Kanatelia, "Chartographiki tekmeriose tes Archaias Siphnou-Digital Archaeological Map of Siphnos," in *Proceedings of the 2nd International Sifnean Symposium*, ed. Tz. Zerboudakis (Athens: Society for Sifnean Studies, 2005). The digital map is in p. 132.

[912] Bassiakos and Stauropodis, "Gold, Silver and ancient mines in the Aegean."

The mining areas have been surveyed by Dr Y. Bassiakos, a geologist and Head of the Department of Archaeometry at the "Demokritos" National Research Centre in Athens, who also participated in the scientific team that researched the ancient mines of Siphnos under the guidance of the Institute of Nuclear Physics Max-Planck in Heidelberg over two decades.[913] The location and direction of the two verified metalliferous areas was presented in a map while the northern part of the island was not included because it had not been surveyed[914].

The above map is indicative, as far as the breadth of the zones is concerned and rigid on the directions of these zones, as has been stated by its author Dr Yiannis Bassiakos[915].

The directions have been applied to the map of Siphnos with triangular topographical nets and when broadened, they coincide with the two areas identified as the mining areas. (Figure 59. The topographical networks and the mining areas on Siphnos). The inter-visibility lines that cross the defined mining areas are accidental and not unintentional. The results confirm the existence of a surface topographical network as was anticipated by Forbes:

> "The miners seem to have had a topographical method of planning the details of the underground working, since it would be impossible otherwise to understand why they made passages between two distant points and through barren rocks"[916].

That topographical network would have been of absolute importance in prospecting the direction of the veins, the location of the underground galleries, and in finding new veins. The existence of the surface network can also explain accuracy of the ancients in the opening of the shafts from the surface down through to the veins or the galleries attested by archaeological and geological survey[917]. This practice was followed only during the second period of the exploitation of the mines and not before, as has been already mentioned (see Chapter 3, *Archaeometallurgy*, p. 92).

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[913] The results have been published in Wagner and Weisgerber, "Silber, Blei und Gold auf Siphnos- Prahistorische und antike Metallproduktion."
[914] Bassiakos and Stauropodis, "Gold, Silver and ancient mines in the Aegean," p. 5.

[916] Forbes, *Studies in Ancient Technology*, p. 141.
[917] Conophagos, *Le Laurium Antique*, p. 118. (Greek Edition)

The third area in the northern part of the island has not been investigated by the geological team as has been mentioned already. Nevertheless, a surface survey by Dr Bassiakos in April 2005 has given indicated that the area has metalliferous veins and it should be further examined to see if they were exploited in antiquity.

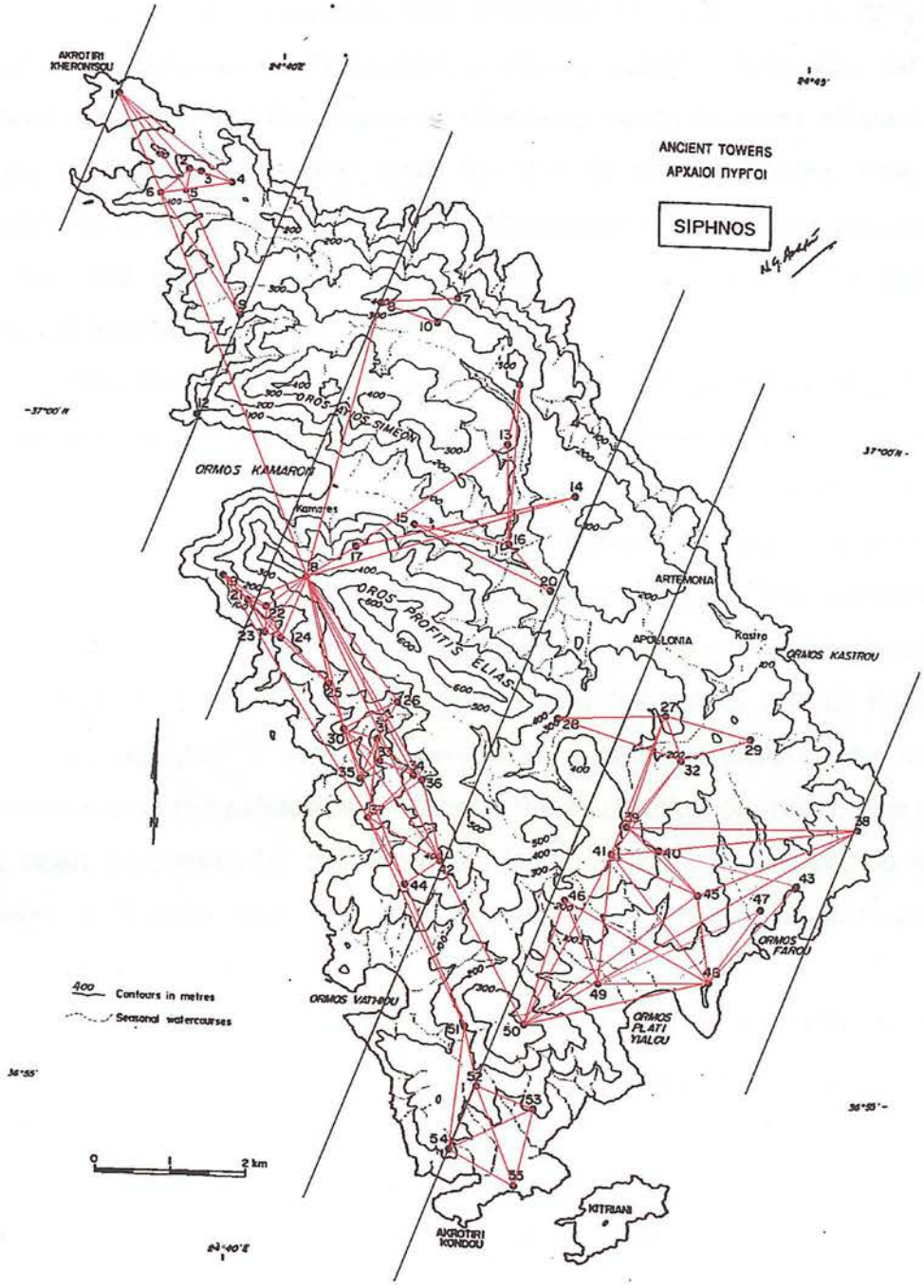

Figure 59. The topographical networks and the mining areas on Siphnos

Location of the towers

The final question, regarding the identification of the towers as an intentionally constructed group, was whether there were common features concerning the selection of their location that could explain the seemingly random variety of sites that they had been placed. The hypothesis that they could be founded on surface thin metalliferous veins, derives from the lengthy descriptions in Renaissance mining texts[918], reflecting far more ancient concepts, that the heavenly influences would be more efficient at the edges of surface veins that were too thin to be exploitable. They were considered to be analogous to the top branches of a tree that are closer to the sun and the stars, and thereby, would absorb directly the beneficial impact of their rays, or "fire" according to Aristotle.

The above hypothesis has been tested and proved correct during a survey (autopsy) that was organised in collaboration with Dr Bassiakos in April 2005 in Siphnos. Of the ten towers that were examined, nine were standing on the edges of thin surface veins; the one that was not, proved not to have been a tower but the ruin of an old threshing floor. The correction had already been made by the archaeological team that surveyed the towers but the publication of the mistake was made after the author and Dr Bassiakos made their autopsy[919]. This has served as a negative proof of the author's hypothesis and the existence of veins in the foundation of most of the towers has been confirmed by the topographic team working in Siphnos for the Ministry of Culture, during the International Symposium that took place in Siphnos in July 2006.

The foundation of the towers on thin veins, veinlets as they are called or feeders[920], is compatible with the concepts written on mining in sixteenth century texts and are reflective of ancient beliefs[921], that the form of the metalliferous veins resembled a tree with its roots at the centre of the earth and the veins coming towards the surface like branches. The alleged

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[918] Biringuccio, *Pirotechnia*. Also in Lazarus Ercker, *Lazarus Ercker's Treatise on Ores and Assaying / translated by the German edition of 1580*, trans. Anneliese Grunhaldt Sisco and Cyril Stanley Smith, 1951 ed. (Chicago: The University of Chicago Press, 1580).

[919] See map of the located Siphnian towers in Papadopoulou, "Thirteen unknown ancient towers in Siphnos," p. 104.

[920] Ercker, *Lazarus Ercker's Treatise on Ores and Assaying / translated by the German edition of 1580*, p. 11.

[921] Biringuccio, *Pirotechnia*, p. 94. Also in Ercker, *Lazarus Ercker's Treatise on Ores and Assaying / translated by the German edition of 1580*, p. 4.

generative influence from the stars, according to these beliefs, would have penetrated and affected the formation of the metals through the thin veins that reached the surface and would have been made closely exposed to the heavens, just as the tree would get from the finer branches, the life-giving agency of sunlight.

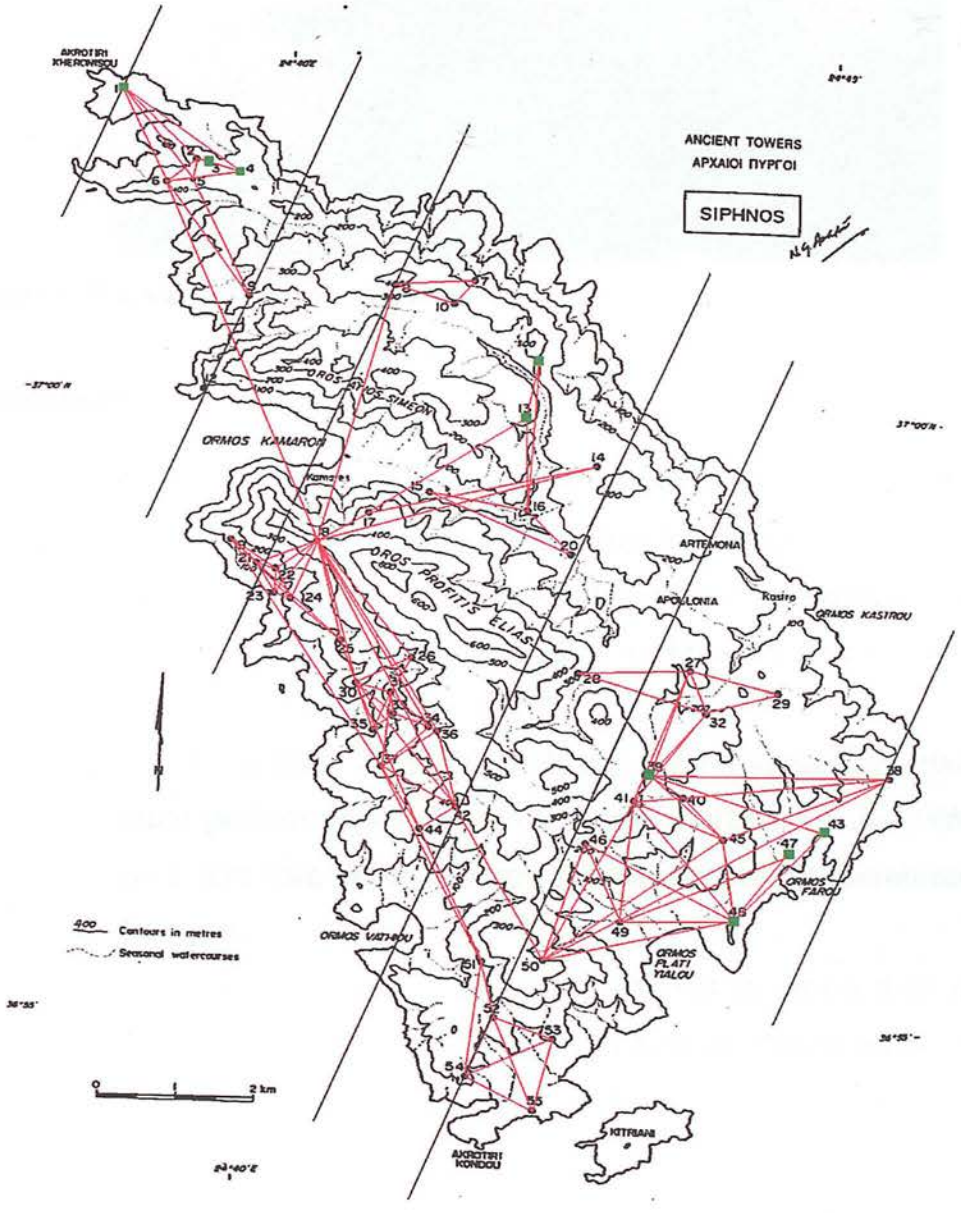

Figure 60. Map with the location of the towers examined

It should be noted that the towers that were visited by the author and Dr Bassiakos were selected to be scattered in all areas of Siphnos and in various locations and at different altitudes.

[The survey is likely to continue based on a larger project in collaboration with the National Research Centre "Demokritos".]

Figure 61. The surface vein on which the tower Pharos is located

Conclusion

The research has proven that the above hypothesis is valid and that the initial purpose, the efficient cause behind the construction of the towers could be connected, in a multivalent way, with the exploitation of the mineral resources of Siphnos and their mining workings. These multiple intentions and causes can be analysed as follows:

1) Participation in the sacred: the towers served as places for ritual performances like *Lenaia* and storage for the *pithoi,* the wine jars that were required for the ceremonial celebrations of Dionysos

2) They constituted a desperate attempt to renew their mineral resources by attracting thunderbolt strikes, conceived of as signs of divine epiphany and hierogamy, a celestial procreation act. This is also reinforced by the fact that the towers stood on the edges of thin exposed metalliferous veins that could not be worked. The choice for the location seems to have been connected with the belief that metals are generated from the earth and with the impact of the heavens. The Aristotelian theory of *metallogenesis* verifies this concept and can be seen as an attempt to explain it in a scientific way.

3) The towers would have functioned also as lightning rods for the protection of the workers and the mining galleries. Lightning

is a phenomenon very common in mines and a priority safety issue for miners, even today.

4) The flat roofs, terraces on the top of the towers would have served as an observatory and in particular, astronomical observations would have been undertaken that were, according to Agricola, necessary for judging the direction of the metalliferous veins.

5) The formation of the towers created a topographical net with distinct triangles that would have been absolutely vital for directing the opening of the galleries after the sixth century BC. The techniques that were applied were very efficient in constructing galleries that led to the richest ore, not by blindly following the veins but by intented direction of the galleries to the most workable part of the ores. The network that the towers formed was relevant to and responsible for the accuracy in the placement and opening of the shafts that were reached from the surface and that had managed to be linked successfully to the underground galleries. Triangulation was a well-known topographical technique, used from at least the sixth century BC as is attested to in other projects like the Eupalinos' tunnel in Samos[922].

6) The towers were built under the patronage of the phratries, the social, economic and religious units of Ionian societies that were also the supervisors of the workings, the distributors of the profits to their members and the religious attendants of the rituals and the festivals.

7) The towers would have been built as a display of the wealth of the Siphnians and a statement of their powerful status due to their minerals resources. They could have also served as landmarks that would have discouraged any potential invaders and a source of astonishment to and admiration by any approaching traders from other cities and regions.

8) It is probable that some of the towers would have been used as storage or even workshops for the most valuable final

[922] Rihll and Tucker, "Greek engineering: the case of Eupalinos' tunnel," pp. 403-431.

products of silver and gold and also as trading centres, especially the ones closest to ancient harbours, like the Aspros Pyrgos.

9) The above suggested functions, would not, in any case, contradict or exclude other uses of the towers such as occasional houses for member of the phratries, storage for agricultural products and refuges in case of danger.

The form of the self-standing tower in the understanding of the people of ancient Greece was that it was a receptacle and a safe crypt where a sacred union could take place and a passage for the fertilizing power of the heavens. The seclusion and imprisonment (φυλακή) that the tower offered, served also as protection and the proclamation of an invaluable regenerative process.

It has been argued that the seclusion and imprisonment were a mythological means of preparing the *Telesis,* the accomplishment of the sacred marriage, which was the regenerative action par excellence.

The legends that have survived in Greece[923] confirm the strength and duration of the belief that the tower, as the ideal protector and receptor, was selected as the place where the female (representing the potential and essential regenerating receptor) would have been kept imprisoned and protected, while the male contender would have had to have been creative and inventive to have made his way in the tower and to have performed the divine union as a regenerative ritual.

The above analysis of the essence(s) that could be attributed to the Siphnian towers has been used as a paradigm of the architectural approach that the present thesis is introducing. The architecture of monuments consists of tangible and intangible elements and values. The work of the restorer apart

[923] The most famous of these legends that can be found everywhere in the Greek countryside is the one about the Tower of Horia, according to which the beautiful maiden prefers to die than submit to the conqueror of the tower. This very popular among the Greeks legendary story has been associated with the ruins of several towers in Thessalia (the area around Thebes). There exist very interesting interpretations and analyses of the myth the most interesting being the one by Lekatsas according to which the legend is a syncretism of the myth of Ariadne and the Labyrinth in the place of the tower, a narration of the ritual of the sacred marriage. Panages Lekatsas, "Labyrinth and the Labyrinth Ritual," *Hos* z, no. 76-85 (1964). The subject has been further investigated and confirmed in George Dimitrokalis, *Religious and Laographic Studies* (Athens: 1997), pp. 159-166.

from the historical and structural documentation of the building should investigate and identify the intangible aspects and values that the monument had acquired during its lifetime and that were based on the invariable elements of its eidos as these have been interpreted and perceived in different periods according to the cultural context of the people that have come in contact with them.

The depth and level of this understanding are crucial for decisions that have to be made by the restorers and that concern the existence of a monument, the significance and role it will have in the community and also the prospectives it can attain and develop in the future.

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